



U.S. Department of the Interior
Bureau of Land Management

Coastal Plain Oil and Gas Leasing Program

Environmental Impact Statement

FINAL

Volume 3: Appendix S

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US Department of the Interior
Bureau of Land Management

In cooperation with:

US Fish and Wildlife Service
US Environmental Protection Agency
Native Village of Kaktovik
Native Village of Venetie Tribal Government
Venetie Village Council
Arctic Village Council
North Slope Borough
State of Alaska

Estimated Lead Agency Total
Costs Associated with Developing
and Producing this EIS: \$3,970,000

Mission

To sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

Cover Photo: Northward view in central coastal plain area near the Sadlerochit River showing gently rolling topography typical of the area. Natural oil indications are visible of an oil seep that occurs along the coast (Barter Island). Photo by David Houseknecht (USGS).

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Appendix S

Public Comments and BLM Responses

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Appendix S. Public Comments and BLM Responses

This volume presents comments the Bureau of Land Management (BLM) received on the Coastal Plain Oil and Gas Leasing Program Draft Environmental Impact Statement (Leasing EIS). It also includes a description of the public comment process, how the BLM considered all comments, and responses to all substantive comments.

S.1 DRAFT LEASING EIS COMMENT PROCESS

The National Environmental Policy Act (NEPA) requires that all substantive comments received before reaching a decision must be considered to the extent feasible, and that agencies must respond to all substantive written comments submitted during the public comment period for an EIS (40 CFR 1503.4). Comments must be in writing (including paper or electronic format or a court reporter's transcript taken at a formal public meeting or hearing), substantive, and timely, in order to merit a written response.

Although the BLM diligently considered each comment letter, the comment analysis process involved determining if a comment was substantive or non-substantive. In performing this analysis, the BLM relied on Section 6.9.2, Comments, in the BLM NEPA Handbook H-1790-1 to determine what constituted a substantive comment.

A substantive comment does one or more of the following:

- Questions, with a reasonable basis, the accuracy of the information or analysis in the EIS
- Questions, with a reasonable basis, the adequacy of the information or analysis in the EIS
- Presents reasonable alternatives other than those in the Draft EIS that meet the purpose of and need for the proposed action and addresses significant issues
- Questions, with a reasonable basis, the merits of an alternative or alternatives
- Causes changes in or revisions to the proposed action
- Questions, with a reasonable basis, the adequacy of the planning process itself

Additionally, the BLM's NEPA handbook identifies the following types of substantive comments:

- Comments on the Adequacy of the Analysis—Comments that express a professional disagreement with the conclusions of the analysis or assert that the analysis is inadequate are considered substantive; they may or may not lead to changes in the Final EIS. Interpretations of analyses should be based on professional expertise. Where there is disagreement within a professional discipline, a careful review of the various interpretations is warranted. In some cases, public comments may necessitate a reevaluation of analytical conclusions. If, after reevaluation, the BLM Authorized Officer responsible for preparing the EIS does not think that a change is warranted, the response should provide the rationale for that conclusion.
- Comments That Identify New Impacts, Alternatives, or Mitigation Measures—Public comments on a Draft EIS that identify impacts, alternatives, or mitigation measures that the draft did not address are considered substantive. This type of comment requires the BLM Authorized Officer to determine if it warrants further consideration; if so, he or she must determine if the new impacts,

new alternatives, or new mitigation measures should be analyzed in the Final EIS, in a supplement to the Draft EIS, or in a completely revised and recirculated Draft EIS.

- Disagreements with Significance Determinations—Comments that directly or indirectly question, with a reasonable basis, determinations on the significance or severity of impacts are considered substantive. A reevaluation of these determinations may be warranted and may lead to changes in the Final EIS. If, after reevaluation, the BLM Authorized Officer does not think that a change is warranted, the BLM's response should provide the rationale for that conclusion.

Comments that failed to meet the above description were considered non-substantive.

After publishing the Draft EIS on December 20, 2018, the initial 45-day public comment period to receive comments on the Draft EIS was extended by an additional 30 days. After this extension, the public comment period officially ended on March 13, 2019. The BLM received written comments by mail, fax, email, the online comment form via ePlanning, and handwritten and verbal testimony at public meetings.

The BLM held public meetings during the comment period in North Slope communities, Anchorage, Fairbanks, and Washington, DC. Pursuant to ANILCA Section 810(a)(1) and (2), the BLM also conducted a hearing in Kaktovik to gather comments regarding potential impacts on subsistence use resulting from the alternatives considered in the Draft EIS. In order to capture all relevant comments, court reporters were made available in all meeting locations for attendees to provide verbal testimony if they desired. In Fairbanks, Anchorage, and Washington, DC, additional court reporters were made available to individuals who wished to provide one-on-one testimony. The BLM set up comment stations with computers at these three meetings for those who wished to submit comments electronically. A list of the meetings and meeting dates are provided below.

- February 4, 2019: Fairbanks
- February 5, 2019: Kaktovik
- February 6, 2019: Utqiagvik
- February 7, 2019: Fort Yukon
- February 9, 2019: Arctic Village
- February 10, 2019: Venetie
- February 11, 2019: Anchorage
- February 13, 2019: Washington, DC

Comments received covered a wide spectrum of thoughts, opinions, ideas, and concerns. The BLM recognizes that commenters invested considerable time and effort to submit comments on the Draft EIS. The agency developed a comment analysis method to ensure that all comments were considered, as directed by NEPA regulations. This systematic process ensured the BLM tracked and considered all substantive comments.

On receipt, each comment letter was assigned an identification number and logged into a database that allowed the BLM to organize, categorize, and respond. The BLM coded substantive comments from each letter to appropriate categories, based on content, and the link to the commenter was retained. The categories generally follow the sections presented in the Draft EIS, though some related to the planning process or editorial concerns.

The BLM grouped comments similar to each other together and prepared one response for each group of similar comments. The responses were crafted to respond to the comments and to note if a change to the EIS was warranted.

The BLM received a total of 1,066,803 comment letter submissions; 3,709 of these were considered unique submissions, and 1,063,094 were part of form letter campaigns (discussed further, below, in **Section S.1.1**). Many comments received throughout the comment analysis process expressed personal opinions or preferences, had little relevance to the adequacy or accuracy of the Draft EIS, or represented commentary on management actions that are outside the scope of the EIS. These commenters did not provide specific information to assist the BLM in making a change to the existing action alternatives, did not suggest new alternatives, and did not take issue with methods used in the Draft EIS; the BLM did not address these comments further in this document.

The BLM read, analyzed, and considered all comments of a personal or philosophical nature and all opinions, feelings, and preferences for one element or one alternative over another. Because such comments were not substantive, the BLM did not respond to them. It is also important to note that, while the BLM reviewed and considered all comments, none were counted as votes. The NEPA public comment period is neither an election nor does it result in a representative sampling of the population. Therefore, public comments are not appropriate to be used as a democratic decision-making tool or as a scientific sampling mechanism.

Subject matter experts reviewed comments that recommended additional studies, data, or scientific literature to be incorporated into the analysis; new information and citations were incorporated into the Final EIS as appropriate. Comments citing editorial changes to the document were reviewed and incorporated. The Final EIS has been technically edited and revised to fix typos, missing references, definitions, and acronyms and provides other clarifications as needed.

S.1.1 Letter Campaigns

Several organizations and groups held standardized letter campaigns to submit comments during the public comment period for the Draft EIS. Through this process, their constituents were able to submit the standard letter or a modified version of the letter indicating support for the group's position on the BLM management actions. Individuals who submitted a modified standard letter generally added new comments or information to the letter or edited it to reflect their main concerns. The BLM received 1,063,094 form letter campaign letters, most of which were identical to the master letter. Modified letters with unique substantive comments were given their own submission number and were coded appropriately.

S.1.2 Response to Comments on BLM's Interpretation of 2,000-Acre Facility Limit in Section 20001(c)(3) of the Tax Cuts and Jobs Act of 2017 (Public Law 115-97)

I. Background

Section 20001 of the Tax Cuts and Jobs Act of 2017 (PL 115-97) directs the Secretary of the Interior, acting through the BLM, to establish and administer a competitive oil and gas program for leasing, developing, producing, and transporting oil and gas in and from the Coastal Plain in the Arctic National Wildlife Refuge. In doing so, the amount of allowable production and support facilities is limited by Section 20001(c)(3), which states the following:

SURFACE DEVELOPMENT—In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support

facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section.

To facilitate the impact analysis, in Section 1.9.1 of the Draft EIS, the BLM provided its proposed interpretation of Section 20001(c)(3). It requested public comment on its interpretation as part of the overall public comment period for the Draft EIS. The BLM received a few dozen substantive comments on the proposed interpretation, submitted by a broad range of commenters, including other government agencies, nonprofit environmental organizations, a tribe and a tribal entity, a group of scientists, and various individuals. The BLM considered these public comments in finalizing the interpretation, which in turn is used in the impact analysis in the Final EIS.

The final interpretation is substantially the same as the proposed interpretation in most respects; however, in response to public comments, the BLM has changed its interpretation of gravel mines that supply mineral materials for construction and maintenance of oil and gas facilities; the agency now treats them as support facilities that count against the 2,000-acre facility limit.

The BLM also added language to help clarify that production and support facilities constructed under right-of-way grants are counted in the same manner as they would be if constructed under the rights acquired under oil and gas leases.

All other changes to Section 1.9.1 in the Final EIS are non-substantive, including removing language describing the BLM's rationale for its interpretation, which is now included in the discussion that follows.

II. Discussion of the Final Interpretation and Responses to Comments on the Proposed Interpretation in the Draft EIS

Facility Footprint vs. Greater Disturbance Area

Some commenters suggested that the 2,000-acre limit should apply to all land that is disturbed or otherwise affected by oil and gas activities, not just the footprint of constructed facilities. In this regard, commenters suggested counting against the 2,000-acre limit that land indirectly affected by the construction and operation of facilities and by oil and gas activities generally, such as geophysical exploration.

In its proposed interpretation, the BLM explained that the limitation does not apply to surface disturbance that is indirectly related to or resulting from applicable facilities. This is because those lands are not "covered by [the facilities themselves]," as that phrase is used in Section 20001(c)(3) of PL 115-97. The BLM stands by its interpretation in this regard and adds that for the same reason, land affected by general oil and gas activities, separate and apart from the footprint of applicable production and support facilities, also does not count against the 2,000-acre limit.

Section 20001(c)(3) makes clear that the limit applies only to the area of those lands directly "covered by" production and support facilities. There is no discernible intent in Section 20001(c)(3) to count lands indirectly affected by facilities, such as lands adjoining airstrips, roads, pipelines, or facilities on gravel pads that may be affected by such conditions as fugitive dust, noise, oil spills, or air emissions emanating from such facilities.

As the analysis in the Final EIS notes, such indirect impacts can extend far from the facilities themselves. For example, in areas that experience high winds, the fugitive dust emitted from a single 5,000-foot gravel airstrip could be deposited on approximately 2,000 acres of surrounding vegetation. If the BLM were to adopt the commenters' suggestion, the entire 2,000-acre limit could be reached with the construction and operation of a single airstrip; this would preclude any other oil and gas facilities throughout the Coastal

Plain. In addition to being at odds with the plain language of Section 20001(c)(3), it is unreasonable to conclude that Congress intended such an interpretation.

Reclaimed Acreage

Several commenters suggested that the 2,000-acre limit should apply to the cumulative total acreage of all production and support facilities authorized throughout the life of the Coastal Plain oil and gas program; that is, the acreage of fully reclaimed land previously containing such facilities would nonetheless continue to count against the 2,000-acre limit. In support, commenters stated that the BLM's "at any given time" interpretation of crediting reclaimed acreage against the 2,000-acre limit could result in the entire Coastal Plain being developed. This, the commenters claim, would be at odds with Congress's intent to substantially limit impacts associated with oil and gas facilities.

In this regard, one commenter described a potential repeating cycle of covering up to 2,000 acres of land with production and support facilities, then reclaiming it. This cycle would be repeated until virtually all federal land in the Coastal Plain had been covered by production and support facilities.

Commenters also called into question the efficacy of reclamation, noting that in the Arctic it can take substantially longer to reclaim land to its prior functionality, compared with other areas. They stated that land that has been subject to oil and gas development can never be returned to an undisturbed wilderness state.

In its proposed interpretation, the BLM explained that it was applying the 2,000-acre limit to the total acreage of production and support facilities covering federal land at any given time. This is because the qualifying language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 indicates Congress intended a time limit. Under this interpretation, the acreage of fully reclaimed land previously containing such facilities would no longer count against the 2,000-acre limit.

Having considered the points raised by the commenters and found them to be ineffective, the BLM stands by its interpretation of the statute in this regard.

Standard rules of statutory interpretation provide that all of the language in a statute is to have meaning and effect; however, had Congress intended to apply the 2,000-acre limit to the cumulative total of all production and support facilities that may ever be authorized on federal lands, the language "during the term of the leases under the oil and gas program under this section" contained at the end of Section 20001(c)(3) of the Act would be superfluous. The BLM's interpretation gives that language meaning and effect. In doing so, it uses a common dictionary definition of the word "during," meaning "at a particular point in the course of." Under this definition, the limit is interpreted to apply at any particular point in the course of the BLM's implementation of the oil and gas program; that is, at any point during the program, no more than 2,000 acres of federal land could be covered by production and support facilities.

The commenters' argument that the BLM's interpretation could result in much or virtually all of the Coastal Plain being covered by production and support facilities is unfounded and unreasonable. Given the way oil and gas programs ultimately develop, it is not possible to have unending cycles of covering up to 2,000 acres with facilities, reclaiming the land, and covering up 2,000 additional acres, as one commenter suggested. Instead, the most likely scenario is just the opposite, even assuming that the Coastal Plain would be substantially leased and developed. It would involve perhaps only one round of the cover-reclaim-cover cycle. Under this scenario, only some of the first 2,000 acres of land covered by production and support facilities would be reclaimed in time for that "recycled" acreage to be used by subsequent developments.

According to the reasonably foreseeable development scenario described in the EIS (**Appendix B**), the Coastal Plain program could last approximately 85 years, from the first lease sale to the completion of the abandonment and reclamation process of the last oil and gas facilities. Given that most North Slope production facilities remain in operation for about 30 to 40 years (**Appendix B** provides a range of approximately 10 to 50 years), no production would be expected in at least the first 8 years following the first lease sale. Moreover, in order for the acreage to be reused for a new development, the last reclamation would have to be completed by about 60 years after the first lease sale. Because of these factors, it is likely that there would be time for only one round of the cover-reclaim-cover cycle.

Additionally, some facilities may last the entire life of the oil and gas program, such as pipelines and access roads that support the broader Coastal Plain program area. The acreage of land covered by such facilities would not be subsequently available for reuse by facilities; thus, even if there were a complete round of the cover-reclaim-cover cycle, it would likely not result in a full 2,000 acres being “recycled” and made available for subsequent development.

Accordingly, even assuming a robust leasing and development scenario, under the BLM’s interpretation, it is likely that substantially less than 4,000 cumulative acres of land would be covered by production and support facilities over the life of the oil and gas program; thus, under the BLM’s interpretation, only a tiny fraction of the 1,563,500 acres of federal land comprising the Coastal Plain that commenters argue could be covered by facilities.

The BLM agrees with the commenters that reclamation to the point of returning full habitat function can take longer in the Arctic than elsewhere; however, until reclaiming land with production and support facilities is determined to be adequate, the acreage of such facilities would continue to count against the 2,000-acre limit. Also, while it is true that once development occurs the land can never be returned to an undisturbed wilderness state, when production and support facilities are removed and land is fully reclaimed, it can once again contain wilderness values. Under such a scenario, it could qualify for congressional wilderness designation under the Wilderness Act.

Elevated Facilities

Some commenters suggested that the BLM should count all the land under elevated pipelines and structures against the 2,000-acre limit, not just those portions of the facilities that come in contact with the ground. In this regard, commenters noted that, in addition to causing direct impacts where they make contact with the ground, elevated facilities can cause indirect impacts on areas under and near the elevated portions of the facilities; this can inhibit wildlife movement. For instance, one commenter stated that elevated pipelines might affect snow accumulation depths, surface drainage characteristics, wind velocities, and sunlight penetration, resulting in changes in habitat and wildlife access in areas under and near pipelines.

Under its proposed interpretation, the BLM explained that it was applying the 2,000-acre limit to only those portions of elevated facilities that touch the land’s surface. Having carefully considered the points raised by the commenters, the BLM is standing by its initial interpretation. BLM bases its interpretation on Section 20001(c)(3) of PL 115-97, which explicitly includes in the 2,000-acre limit “piers for support of pipelines.” This demonstrates that Congress intended to count only those portions of elevated pipelines that touch the ground, which are the piers that hold up elevated pipelines. Had Congress intended to include the entire width and length comprising elevated pipelines, in Section 20001(c)(3) it would not have called out only a portion of elevated pipelines—the piers—as applying against the 2,000-acre limit.

By extension, the BLM assumes that Congress would have given similar treatment to elevated structures, such as drill pads and processing facilities, had those been specifically addressed in Section 20001(c)(3); however, oil and gas operators no longer commonly use elevated structures on Alaska's North Slope.

Further, as discussed above, Section 20001(c)(3) makes clear that the 2,000-acre limit applies only to those lands directly "covered by" production and support facilities, or the facility footprint, and not adjoining lands indirectly affected by facilities, or the greater disturbance area. In this regard, changes in snow accumulation depths, surface drainage characteristics, wind velocities, and sunlight penetration in areas under and near the elevated portions of pipelines are indirect impacts not caused by the pipeline's footprint on the land. As noted above, such indirect impacts can affect land far from the facilities themselves.

Buried Pipelines

One commenter requested that the BLM clarify how the 2,000-acre limit applies to buried pipelines. The BLM did not address this specific question in its proposed interpretation. Although most pipelines on Alaska's North Slope are elevated, in certain applications all, or more commonly certain segments of a pipeline, are sometimes buried, such as those at road and river crossings. Since the entire portion of buried pipeline segments touches the land, the entire two-dimensional area, the width and length, of buried pipeline segments would be counted against the 2,000-acre limit.

Snow and Ice Facilities

Some commenters suggested that the BLM should count against the 2,000-acre limit any facilities constructed with snow and ice, such as snow trails and ice roads and ice pads. Commenters noted that ice roads and ice pads can adversely affect wildlife and ecology. One commenter stated that while ice roads may not adversely affect vegetation, wildlife can be affected by traffic, noise, and other human activity associated with ice road operations. Another commenter stated that ice road construction requires large quantities of freshwater, drawn from lakes and rivers, and can leave residual impacts beyond the winter season. Yet another commenter suggested, incorrectly, that ice roads and pads "destroy habitat as thoroughly as [gravel] drilling structures."

In its proposed interpretation, the BLM explained that facilities constructed with snow and ice have a fleeting existence, melting away in the summer and leaving the tundra surface largely undisturbed; thus, not counting them against the 2,000-acre limit is consistent with the time limit intended by Congress. Land containing such facilities would be fully reclaimed to its prior function after the snow and ice melt away, without any remedial action required by the operator.

The BLM also noted that including snow and ice facilities would make Congress's clear purpose—establishing an oil and gas program on the Coastal Plain—impracticable. Temporary ice roads and pads are used extensively in Alaska North Slope oil and gas operations. This avoids the substantial environmental impacts associated with similar facilities constructed with gravel. Given their extensive use, ice roads and pads supporting exploration alone could exceed the 2,000-acre limit, leaving no acreage remaining for oil and gas developments in the Coastal Plain; thus, including their acreage would make development impracticable and at odds with congressional intent.

Drawing water for ice road construction can temporarily lower water levels in lakes and rivers, and ice road operations can disturb nearby wildlife, as discussed above; even so, the 2,000-acre limit is not intended to apply to lands in the greater disturbance area that experience such indirect impacts from production and support facilities. Instead, the limit applies only to that portion of land comprising the facility footprint—that land experiencing a direct loss of habitat from being covered by the facility. Although habitat underlying ice

roads and pads temporarily loses its function until such time that the ice melts away, unlike facilities constructed with gravel or other fill material, ice roads and pads do not result in a loss of habitat.

The BLM stands by its initial interpretation.

Gravel Mines

In its proposed interpretation, the BLM excluded gravel mines from the definition of production and support facilities and thus did not apply the 2,000-acre limit to gravel mines. In support, the agency stated that gravel mines supply raw materials for constructing oil and gas facilities; but, similar to mills that supply steel for construction of pipelines and other facilities, they are not themselves oil and gas facilities.

Several commenters suggested that the 2,000-acre limit should apply to gravel mines. They stated that the BLM's steel mill analogy was flawed. Their rationale is that gravel mines would be located in the Coastal Plain, whereas steel mills would not. One commenter noted that desalinization plants would fall within the definition of production and support facilities, notwithstanding their purpose to supply water to other oil and gas facilities.

Another commenter noted that excluding gravel mines from the definition of production and support facilities was inconsistent with the BLM's own definition of "facility;" that is, something that is built, installed, or established to serve a particular purpose, here, the development, production, and transportation of oil and gas in and from the Coastal Plain. The commenter noted that gravel mines would be established to serve the particular purpose of supplying gravel for oil and gas facility roads and pads constructed in the Coastal Plain. Another commenter noted that gravel mines completely denude the landscape of vegetation, effectively removing habitat for all animals using it.

The BLM generally agrees with the points raised by the commenters. For the reasons stated by the commenters, the agency has changed its definition of production and support facilities to include gravel mines that supply mineral materials for construction and maintenance of oil and gas facilities. Accordingly, the BLM is now counting gravel mines against the 2,000-acre facility limit.

Tracking and Enforcement of Facility Acreage

A few commenters asked the BLM to explain how it would track and enforce the 2,000-acre limit.

Required Operating Procedure (ROP) 33 requires operators to submit to the BLM Authorized Officer detailed GIS data for all oil and gas facilities within 6 months of construction completion. The BLM intends to use the data to calculate the amount of acreage covered by production and support facilities. It would continually and cumulatively track the acreages for all such facilities on federal lands throughout the Coastal Plain. BLM authorizations for constructing production and support facilities would contain acreage limits for those facilities. At no time would the BLM issue authorizations that allow the cumulative 2,000-acre limit to be exceeded.

During field inspections and when reviewing the GIS data submitted under ROP 33, the BLM would determine whether the facility footprints are within the authorized acreage limits. If an operator exceeds its limits, the BLM would take appropriate action to promptly bring the operator back into compliance.

Under ROP 35, on completion of facility operations, operators must submit for the BLM's approval an abandonment and reclamation plan. The plan must contain steps to ensure ecosystem restoration of the land's previous hydrological, vegetation, and habitat condition. After the BLM determines that completed reclamation under an approved plan is adequate and in compliance with the plan, it would subtract the

associated facility acreage from the total cumulative footprint of all production and support facilities that count against the 2,000-acre limit.

S.2 HOW TO READ THIS VOLUME

The BLM assigned a letter number to every unique communication received during the Draft EIS public comment period. The following tables contain all substantive comments with the BLM's responses; they are organized by the category that comments regarded. Commenter names and applicable organization or agency are provided for letter submissions that did not request that their information be withheld. Complete transcripts of public meetings and copies of all substantive comment letters are available on the BLM's project ePlanning website, which can be accessed through: www.blm.gov/alaska/coastal-plain-eis.

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S.3 SUBSTANTIVE PUBLIC COMMENTS AND BLM RESPONSES

S.3.1 Acoustic Environment

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Dennis	Higgs	—	37688	5	Acoustic Environment	no information is provided for the complexities of sound propagation underwater.	Section 3.2.3 has been updated to include information on sound propagation under water. Impacts of underwater noise on aquatic species and marine mammals are described in Sections 3.3.2 and 3.3.5 of the Draft and Final EISs, respectively.
2.	Dennis	Higgs	—	37688	6	Acoustic Environment	Exploration and construction over ice would have complex effects on the underwater acoustic environment and could transmit quite effectively through the ice and into underlying unfrozen water, including in coastal environments. As the report notes there are overwintering habitats adjacent to expected pile driving sights and these extremely loud construction noises could transmit quite effectively through the ice and into these overwintering water bodies, with potentially deleterious effects.	Section 3.2.3 has been updated to include information on sound propagation under water. Impacts of underwater noise on aquatic species and marine mammals are described in Sections 3.3.2 and 3.3.5 of the Draft and Final EISs, respectively.
3.	Dennis	Higgs	—	37688	10	Acoustic Environment	The only sound measurements provided in the DEIS are for sound levels in air relative to human exposures (dBA). The DEIS completely ignores the large advances made in the science of underwater sound in the last 10 years.	Section 3.2.3 has been updated to include information on sound propagation under water. Impacts of underwater noise on aquatic species and marine mammals are described in Sections 3.3.2 and 3.3.5 of the Draft and Final EISs, respectively.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	68965	57	Acoustic Environment	28. Chapter 3; section 3.2.3, page 3-21. Acoustic Environment Effects. The analysis provided does not include any consideration of effects to the freshwater or marine acoustic environment associated with construction and operation of the seawater treatment plant and the barge landing and storage facilities, as well as boat traffic described in the hypothetical development scenario. These acoustic effects on human receivers should be included here (noting that effects to terrestrial wildlife and marine wildlife are described in subsequent sections).	Section 3.2.3 has been updated to discuss impacts from marine-related sources included in the hypothetical development scenario, including seawater treatment plants and barge loading and offloading. The hypothetical development scenario is applicable to the program area; speculation on the location and level of marine vessel traffic and icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
5.	Brook	Brisson	Trustees for Alaska	98269	150	Acoustic Environment	Second, the DEIS fails to conduct acoustic modeling of all development scenarios to accurately forecast foreseeable noise impacts. This can be accomplished through existing methodologies. ⁷⁴⁷ [47 E.g., Keyel et al. 2017; Keyel et al. 2018.]	Acoustic modeling of all development scenarios to accurately forecast foreseeable noise impacts is out of scope for this programmatic level of analysis, but it may be performed during site-specific analyses of future project-specific development proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Brook	Brisson	Trustees for Alaska	98270	163	Acoustic Environment	The general section on noise in the DEIS addresses impacts resulting from ground-based operations and aircraft, but it fails to address shipping and icebreaking noise impacts at all.1931 While there is some discussion of shipping-related noise later in the DEIS, its exclusion from this section inappropriately suggests it is not an important consideration. The general section should be revised to include at least an overview of shipping noise impacts, including those associated with icebreaking.	Section 3.2.3 has been updated to discuss impacts from marine-related sources included in the hypothetical development scenario, including seawater treatment plants and barge loading and offloading. The hypothetical development scenario is applicable to the program area; speculation on the location and level of marine vessel traffic and icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
7.	Withheld	Withheld	World Wildlife Fund	81184	22	Acoustic Environment	More generally, shipping-related noise is not comprehensively addressed, and where it is addressed in a piecemeal fashion, such as in the marine mammal section, it understates the potential impacts and inappropriately concludes that they will be minimal. These represent major substantive gaps in BLM's analysis. The revised draft EIS should include a substantial and realistic discussion of icebreaking noise, shipping, and construction noise impacts near the program area and along the marine shipping route, and an analysis of the impact of icebreaking on sea ice habitat loss and alteration and subsistence.	Section 3.2.3 has been updated to discuss impacts from marine-related sources included in the hypothetical development scenario, including seawater treatment plants and barge loading and offloading. The hypothetical development scenario is applicable to the program area; speculation on the location and level of marine vessel traffic and icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	World Wildlife Fund	81184	21	Acoustic Environment	Relatedly, there is no recognition of icebreaking noise and other disturbance on marine mammals. Studies document impacts of icebreaking by ships on Arctic cetaceans. For instance, beluga whales have been deflected by icebreaker noise and have left the area with active icebreaking for as long as two days thereafter. Ringed and bearded seals hauled out on ice showed avoidance behavior when an icebreaking vessel was more than 1 kilometer away, and icebreakers can also adversely affect ice-breeding seals during pupping and lactation periods through direct collision or separation of mothers and pups. Studies also document the impacts of icebreaking on Arctic ice habitat by crushing or displacing ice used by ice-breeding nursing seal pups. Noise and Arctic ice habitat disturbances from icebreaking are not addressed anywhere in the DEIS, and these omissions represent a major substantive gap.	The EIS describes impacts from marine-related sources included in the hypothetical development scenario. The hypothetical development scenario is applicable to the program area; speculation on the location and level of icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
9.	Withheld	Withheld	World Wildlife Fund	81184	20	Acoustic Environment	The draft EIS contains several important gaps in its evaluation of the scope and impacts of underwater noise generated by shipping activities associated with the proposed development of the Coastal Plain. For example, the impacts of noise in general and on fish, birds, marine mammals, and subsistence focus heavily on noise-generating activities within or near the program area. As a result, they largely fail to address shipping noise along the entire 1,600-nm marine barge route and its resulting impacts on wildlife, habitat, and subsistence activities throughout the many important marine areas along that route (The International Maritime Organization (IMO) has	Section 3.2.3 has been updated to discuss impacts from marine-related sources included in the hypothetical development scenario. The hypothetical development scenario is applicable to the program area; speculation on the location and level of marine vessel traffic and icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	adopted guidelines to help protect marine life from the harmful impacts of noise from commercial shipping. The IMO guidelines state that the "international community recognizes that underwater-radiated noise from commercial ships may have both short and long-term negative consequences on marine life, especially marine mammals." IMO Marine Env't. Prot. Comm., Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life, MEPC.1/Circ.833, Gothenburg-Sweden, annex § 1.1 (July 30, 2014), available at http://www.ascobans.org/sites/default/files/document/AC21_Inf_3.2.1_IMO_NoiseGuidelines.pdf). Additionally, icebreaking noise and disturbance are not addressed anywhere in the draft EIS. Underwater noise arising from the construction of shipping-related facilities offshore, such as pile-driving, which can harm cetaceans and other marine mammals, is also not addressed.	(see above)

S. Public Comments and BLM Responses (Acoustic Environment)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	WWF-Canada	85059	32	Acoustic Environment	More generally, shipping-related noise is not comprehensively addressed, and where it is addressed in a piecemeal fashion, such as in the marine mammal section, it understates the potential impacts and inappropriately concludes that they will be minimal. These represent major substantive gaps in BLM's analysis. The revised draft EIS should include a substantial and realistic discussion of icebreaking noise, shipping, and construction noise impacts near the program area and along the marine shipping route, and an analysis of the impact of icebreaking on sea ice habitat loss and alteration and subsistence.	Section 3.2.3 has been updated to discuss impacts from marine-related sources included in the hypothetical development scenario. The hypothetical development scenario is applicable to the program area; speculation on the location and level of marine vessel traffic and icebreaking is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
11.	Wolfgang	Rehor	—	74318	5	Acoustic Environment	Disturbance from light and from noise will not be limited to the industrialized areas: the noise from airplanes is associated with a reach up to 50miles in the Draft EIS; also mentioned are helicopters and drill cleaning activities around the pipelines in all areas that are for open for lease sale. the noise from facilities along the coast will cover the 2 mile zone of facility-free area of Alternative D, which is by far not enough for protecting 5 Noise sensitive caribou, as stated in the Draft EIS itself. Also, there will be noise from offshore e industrie and sea vessels.	Section 3.2.3 has been updated to discuss the impacts of noise sources outside the facility-free area on the facility-free area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	5	Acoustic Environment	- Disturbance from light and from noise will not be limited to the industrialized areas: The noise from airplanes is associated with a reach up to 50 miles in the Draft EIS; also mentioned are helicopters and drill cleaning activities around the pipelines in all areas that are for open for lease sale. The noise from facilities along the coast will cover the 2 mile zone of facility-free area of Alternative D, which is by far not enough for protecting noise sensitive caribou, as stated in the Draft EIS itself. Also, there will be noise from offshore industrie and sea vessels.	Section 3.2.3 has been updated to discuss the impacts of noise sources outside the facility-free area on the facility-free area.
13.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	14	Acoustic Environment	The noise from facilities along the coast will cover the 2 mile zone of facility-free area of Alternative D, which is by far not enough for protecting noise sensitive caribou, as stated in the Draft EIS itself. Also, there will be noise from offshore industrie and sea vessels.	Section 3.2.3 has been updated to discuss the impacts of noise sources outside the facility-free area on the facility-free area.
14.	Julia	Wagner	—	83570	9	Acoustic Environment	Disturbance from light and from noise will not be limited to the industrialized areas: The noise from airplanes is associated with a reach up to 50 miles in the Draft EIS; also mentioned are helicopters and drill cleaning activities around the pipelines in all areas that are for open for lease sale. The noise from facilities along the coast will cover the 2 mile zone of facility-free area of Alternative D, which is by far not enough for protecting noise sensitive caribou, as stated in the Draft EIS itself. Also, there will be noise from offshore industrie and sea vessels.	Section 3.2.3 has been updated to discuss the impacts of noise sources outside the facility-free area on the facility-free area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Brook	Brisson	Trustees for Alaska	98269	149	Acoustic Environment	First, the affected acoustic environment in the DEIS is deficient because it fails to identify an adequate baseline using accurate data on background ambient noise levels in the project area. In our scoping comments, we highlighted the need for BLM to gather sufficient baseline soundscape data for areas within and throughout the Coastal Plain.⁷⁴³ That baseline data should have then been utilized in a noise impact study, including modeling of all development scenarios. Instead of gathering new data sufficient to establish an accurate and current baseline, BLM utilized data from the 2010 background acoustic monitoring study at Point Thomson.⁷⁴⁴ Data collected nearly a decade ago outside the Coastal Plain does not constitute “a comparable description of existing acoustic environment in the program area,” as the DEIS claims. ⁷⁴⁵ The Point Thomson study measured noise levels adjacent to the northwestern border of the Refuge, not the ambient noise levels within and throughout the Coastal Plain.⁷⁴⁶ Moreover, Point Thomson is closer to the Prudhoe Bay complex, so ambient noise levels are likely to be different than those in the Refuge. Without first establishing an adequate baseline for this program area, BLM cannot effectively evaluate the impacts of oil and gas development on the soundscape of the Coastal Plain.	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Because the hypothetical development scenario represents a level of development and not the actual locations of future project elements, no noise modeling was undertaken. Noise analyses will occur at the project level once specific projects have been proposed. Baseline ambient noise information would be gathered at that time to more accurately reflect actual background conditions; noise analyses, which may include modeling, would reflect actual development proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Tim	Whitehouse	PEER	95601	2	Acoustic Environment	Several types of information are needed to understand, assess, and disclose potential impacts on the acoustic environment and noise-sensitive resources, and to provide a basis for decisions about lease stipulations and permit conditions necessary for avoiding, minimizing, or mitigating impacts to the extent possible. (For specific details regarding information needs for noise-sensitive resources themselves, see other sections that address polar bears, caribou, birds, subsistence activities and values, visitors and recreation, and wilderness values.) These information needs include: *Baseline (pre-development) acoustic conditions, including natural ambient sound levels and characteristics of baseline noise conditions such as magnitude, timing, duration, and frequency of occurrence of noise events. The metrics used for characterizing baseline conditions should be those that are most relevant to impact assessment and mitigation, and may vary among different types of noisesensitive resources. For example, metrics that characterize the frequency and duration of abrupt noise events loud enough to trigger disturbance responses in wildlife and metrics that characterize average hourly noise levels both may be important for describing baseline conditions. Baseline data are required for those specific time periods and specific geographic locations when and where noise from proposed development activities is expected to coincide with periods and locations of high resource sensitivity, considering factors that	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Because the hypothetical development scenario represents a level of development and not the actual locations of future project elements, no noise modeling was undertaken. Noise analyses will occur at the project level once specific projects and locations have been proposed. Baseline ambient noise information would be gathered at that time to more accurately reflect actual background conditions; noise analyses, which may include modeling, would reflect actual development proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	affect noise propagation and attenuation. Periods and locations of particularly high resource sensitivity may include those associated with: o Polar bear denning activities; o Caribou calving and post-calving activities; o Migratory bird breeding and brood-rearing activities; o Kaktovik (all periods of occupancy); o Subsistence activities beyond Kaktovik; o Visitor use on the coastal plain; and o Visitor use in designated Wilderness adjoining the 1002 Area. * Acoustic characteristics of specific development-related noise sources, including typical and maximum magnitude, timing, duration, and number of occurrences during time periods relevant to impact analysis and mitigation (analogous to an air emissions inventory necessary for predictive modeling of development-related impacts on air quality and air quality related values). Onethird octave band frequency resolution is preferred. * Modeled spatial predictions of acoustic impacts attributable to developmentrelated noise sources (i.e., noise propagation modeling.) Spatial noise propagation modeling is required for the purpose of estimating how developmentrelated noise would be expected to propagate and potentially impact noisesensitive resources depending on factors such as noise magnitude, distance from the noise source, ambient sound levels, atmospheric conditions, and landscape characteristics. * Disturbance-response information that quantitatively or qualitatively characterizes relationships between noise metrics and response metrics for noise-sensitive resources including wildlife, residents and	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	subsistence users, and Refuge visitors on the coastal plain and in adjoining Wilderness. This information is necessary for assessing, disclosing, avoiding, minimizing, and mitigating potential noise impacts to the extent possible.	(see above)
17.	Tim	Whitehouse	PEER	95601	5	Acoustic Environment	What are key information gaps? * Baseline acoustic conditions. Baseline acoustic data for the 1002 Area are completely lacking, with the exception of short-term data collected in the extreme northwest corner of 1002 Area in support of the Point Thomson EIS (USACE 2012). Baseline data provide a foundation for long-term monitoring that will be required to support impact mitigation and adaptive management. * Acoustic characteristics of specific development-related noise sources. Although some general acoustic information is available, impact assessment and mitigation actions would benefit from specific acoustic information associated with specific development activities that are anticipated or proposed for the 1002 Area. Such information is analogous to emissions inventory data that are used to support impact analyses and mitigation requirements for air quality and air quality related values. * Modeled spatial predictions of acoustic impacts. Spatial noise propagation modeling that specifically applies to anticipated / proposed development activities and specific landscape characteristics and seasonal atmospheric conditions of the 1002 Area is lacking. * Disturbance-response information. Although much general information is available, specific disturbance-response information is needed to	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Because the hypothetical development scenario represents a level of development and not the actual locations of future project elements, no noise modeling was undertaken. Noise analyses will occur at the project level once specific projects and locations have been proposed. Baseline ambient noise information would be gathered at that time to more accurately reflect actual background conditions; noise analyses, which may include modeling, would reflect actual development proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	quantitatively or qualitatively characterize relationships between noise metrics and response metrics for noise-sensitive resources including wildlife (especially caribou and polar bears), residents and subsistence users, and Refuge visitors on the coastal plain and in adjoining Wilderness. * Long-term acoustic monitoring. To support impact mitigation and adaptive management, long-term acoustic monitoring should be established early during the phased progression of development activities. Baseline data and long-term monitoring are required for those specific geographic locations and specific time periods where and when anticipated / proposed development activities are expected to coincide with high resource sensitivity. Note that long-term monitoring also is lacking in the BLM-administered NPR-A and the nearby village of Nuiqsut despite public concerns over impacts of aircraft disturbance and development-related noise on village residents, subsistence resources, and subsistence activities. This lack of monitoring information has relevance to the 1002 Area, if BLM Best Management Practice F-1 (BLM 2013) is to be considered for application to future development activities in the 1002 Area. In addition to key information gaps, both BLM and USFWS have significant gaps in the subject matter expertise necessary for credibly and effectively assessing and mitigating impacts of development-related noise on noise-sensitive resources of the 1002 Area.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Brook	Brisson	Trustees for Alaska	98269	151	Acoustic Environment	The actual impacts analysis includes confusing and conflicting statements. For instance, it states that there would be no potential impacts common to all alternatives, but then goes on to state that the acoustic impacts would be similar under all the action alternatives, but less extensive in NSO areas under Alternatives C and D.748 The DEIS does not provide support for the assertion that noise impacts would be limited or nonexistent in NSO areas, which would still be affected by aircraft, seismic operations, vehicle use, and potentially intense ground-based development where NSO stipulations are waived.	The BLM has rewritten Section 3.2.3, Impacts Common to All Alternatives, to state that the nature and type of impacts would be similar across action alternatives. Impacts in no surface occupancy (NSO) areas have been updated under each alternative to describe that the impacts of noise sources outside the NSO areas could have noise impacts in NSO areas.
19.	—	—	Alaska Department of Natural Resources	94102	57	Acoustic Environment	32 Chapter 3.2.3, Alt. B, Page 3-20 Supplement analysis -Noise In the last paragraph on this page, the text indicates there would be no sources of sound from ground-based equipment in areas with No Surface Occupancy (NSO). However, as essential pipeline and road crossings in NSO areas in Lease Stipulation 1, and barge landings or docks in Lease Stipulation 4 are permitted within these areas in Alternative B on a case-by-case basis, sound from industrial activities would be generated. The text needs to be corrected to account for these potential noise sources.	The BLM has updated the impacts analysis in Section 3.2.3 in the Final EIS to account for changes in lease stipulations between the Draft and Final EISs.
20.	Dr. Julianne Lutz	Warren	—	74344	3	Acoustic Environment	Noise-no research on consequences of aircraft, harvesters	The impacts of aircraft noise were discussed for each alternative in Section 3.2.3 of the Draft EIS; additionally, impacts of aircraft noise were addressed in Section 3.3, Biological Resources, of the Draft EIS. Impacts on harvesters were discussed under Section 3.4.3, Subsistence Uses and Resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	Joseph	McCarthy	—	82657	4	Acoustic Environment	During the acoustic analysis, this report assumes a “highly conservative” estimate for increasing airfield traffic in Kaktovic Airport (3-21), yet the report uses “highly optimistic” assumptions elsewhere. If the report uses highly optimistic assumptions for the development scenario, it must use the corresponding threshold for acoustic considerations and airport traffic. The higher airport and associated acoustic impact may effect the dwindling polar bear population more than this report anticipates. Acoustic effects must be determined under the same “highly optimistic” threshold used for the development scenario.	As described on page 3-2 of the Draft EIS, the BLM has strived to minimize the chance that the resultant impact analysis will understate potential impacts; therefore, the hypothetical development scenarios are intended to represent optimistic, high-production, successful discovery in a situation of favorable market prices. These highly optimistic production forecasts are intended to show a higher level of production, and therefore an upper bound of impacts. As such, these optimistic production levels present a conservative estimate of impacts throughout the EIS, including for the acoustic analysis.
22.	Withheld	Withheld	—	87744	1	Acoustic Environment	During the acoustic analysis, this report assumes a “highly conservative” estimate for increasing airfield traffic in Kaktovic Airport (3-21), yet the report uses “highly optimistic” assumptions elsewhere. If the report uses “highly optimistic” assumptions for the development scenario, it must use the corresponding level for acoustic considerations and airport traffic that would result from abundant resources.	As described on page 3-2 of the Draft EIS, the BLM has strived to minimize the chance that the result and impact analysis will understate potential impacts; therefore, the hypothetical development scenarios are intended to represent optimistic, high-production, successful discovery in a situation of favorable market prices. These highly optimistic production forecasts are intended to show a higher level of production, and therefore an upper bound of impacts. As such, these optimistic production levels present a conservative estimate of impacts throughout the EIS, including for the acoustic analysis.

S. Public Comments and BLM Responses (Acoustic Environment)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Tim	Whitehouse	PEER	95601	4	Acoustic Environment	Aircraft disturbance of subsistence resources and activities is an issue that involves noise, but is one that is not solely attributable to acoustic factors. Relevant non-acoustic factors include all of those listed above for wildlife and for people. Because of the importance of non-acoustic factors, potential impacts of development-related noise on subsistence resources and activities cannot be assessed only on the basis of acoustic metrics and must be considered in relation to non-acoustic factors as well. For example, BLM staff have noted that subsistence hunters' concern with aircraft disturbance in and near NPR-A is affected by the high degree of uncertainty and unpredictability about where aircraft will be, and therefore by hunters' inability to foresee and avoid aircraft disturbance when engaged in subsistence pursuits (BLM 2017). The spatial unpredictability of aircraft disturbance contrasts with other development-related disturbances that are predictably associated with gravel roads, pads, and other forms of fixed infrastructure. The information needed to address this issue is a rigorous, interdisciplinary understanding of the effects of aircraft disturbance (including acoustic factors and contextual non-acoustic factors) on subsistence resources, users, and activities. * Long-term acoustic monitoring to determine actual development-related impacts on the acoustic environment, determine the need for noise-mitigation measures, evaluate the effectiveness of such measures following implementation, and support adaptive management. What information is currently	Page 3-18 of the Draft EIS acknowledges non-acoustical factors that can affect human and nonhuman receptors. The BLM has added the unpredictability of aircraft noise to this discussion in the Final EIS. The sources of information cited were examined, and information was added to Section 3.2.3 of the Final EIS where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	available to address the information needs for subjects? * Baseline acoustic conditions. During 2010, short-term baseline acoustic data were collected at two sites (Canning River West Bank and Brownlow Spit) in the extreme northwest corner of 1002 Area in support of the Environmental Impact Statement (EIS) for the Point Thomson project (see USACE 2012, Appendix O, Noise Technical Report). Relevant baseline data also were collected at a third site (Coastal Plain) located approximately 2 mi (3.2 km) west of the 1002 Area. In a study conducted in the NPR-A rather than the 1002 Area, Stinchcomb (2017) demonstrated methods for collecting baseline acoustic data, focusing on baseline characterization of aircraft noise events and noise-free-intervals in relation to subsistence resources and activities. * Acoustic characteristics of specific development-related noise sources. Typical noise levels generated by individual pieces of construction equipment and specific construction operations are available online from the U.S. Department of Transportation Federal Highway Administration (USDOT 2006). Recent noise levels for common gas field activities (including active drilling operations) are reported by Ambrose and Florian (2014) based on field data collected in 2013 at locations near the Pinedale Anticline Project Area in Wyoming. Noise levels generated by different types of aircraft during different phases of flight operations are available from the Federal Aviation Administration's (FAA's) Aviation	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Environmental Design Tool (AEDT, https://aedt.faa.gov/), a software system that models aircraft performance for the purpose of estimating emissions, noise, and fuel consumption. Aircraft noise data extracted from the FAA model, previous versions of the model, or similar sources also can be found in a number of publications. Examples include data for a Bell 206 helicopter, a Cessna 207, and a de Havilland DHC-6 Twin Otter (Miller et al. 2003); and a C-130 cargo aircraft (USACE 2004, Appendix H). * Modeled spatial predictions of acoustic impacts. Currently there is no spatial noise propagation information that is specific to anticipated activities, landscape characteristics, and noise-sensitive resources in and adjoining the 1002 Area, although methods used for the Point Thomson EIS are relevant (see USACE 2012, Appendix O; note that aircraft noise propagation was modeled using an FAA model that has since been replaced by the AEDT). Lacking time and technical capacity for spatial noise propagation modeling, BLM (2018) estimated propagation distances for development-related noise by assuming that noise levels would attenuate by 6 dBA for each doubling of distance from the source (Attenborough 2014). This estimation method does not account for potential effects of meteorological conditions, sound barriers, and landscape characteristics on noise propagation and attenuation. * Disturbance-response information. For noise-sensitive resources in and adjoining the 1002 Area, information that relates specific disturbance	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	responses to specific noise metrics are lacking, but several general sources of pertinent information are available. General reviews on the topic of noise disturbance on wildlife include Pepper et al. (2003), Pater et al. (2009), and Shannon et al. (2015). Frid and Dill (2002) and Francis and Barber (2013) provide theoretical frameworks for understanding noise impacts on wildlife, and risk-assessment frameworks for evaluating low-altitude aircraft impacts are provided by Efroymsen and Suter (2001) and Efroymsen et al. (2001). Stallen (1999) provides a theoretical framework for considering human annoyance with noise. Information sources with greater direct relevance to 1002 Area resources include the literature review prepared by Anderson (2007) and several specific papers on caribou responses to low-flying aircraft including Calef et al. (1976), Valkenburg and Davis (1983), and Harrington and Veitch (1991). Murphy et al. (1993; Maier et al. 1998 is the same study) investigated effects of low-altitude military jet aircraft on the Delta Caribou Herd and is the only work that includes actual noiselevel data. Lawler et al. (2005) examined effects of low-altitude military jet overflights on the Fortymile Caribou Herd, focusing on the calving season. Blix and Lentfer (1992) measured noise and vibration levels resulting from seismic testing, drilling, and transport (including helicopters) in artificial polar bear dens in Prudhoe Bay and concluded that "...the dry and wind-beaten arctic snow muffles both sound and vibrations extremely well and it seems unlikely that polar bears in	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	their dens will be disturbed by the type of petroleum-related activities measured here, providing those activities do not take place within 100 m of the den." But there remains a lack of information about noise levels that are most likely to cause bears to abandon dens, and variation among individual bears also is a factor. There have been instances in which bears have denned immediately adjacent to industrial infrastructure and stayed in the den for the full term. There also have been instances in which dens were abandoned early due to nearby disturbances such as ice-road construction (T. Atwood, pers. comm., 2/13/2018). On the topic of aircraft disturbance of subsistence activities, Stinchcomb (2017) concluded on the basis of a meta-analysis of published literature that "...no peerreviewed literature has addressed the conflict between low-flying aircraft and traditional harvesters in Arctic Alaska" despite extensive evidence that such conflicts are widespread. She speculated that "...the scale over which aircraft, rural communities, and wildlife interact limits scientists' ability to determine causal relationships and therefore detracts from their interest in researching the human dimension of this social-ecological system." Christensen and Christensen (2009) reported results of surveys conducted to determine experiences and preferences of visitors to the Arctic Refuge. Although no survey questions addressed the issue of noise per se, several questions addressed visitor experiences of and preferences for aircraft use for particular types of activities. In addition to the Point Thomson EIS and the forthcoming	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	BLM Supplemental EIS for the GMT-2 project, other relevant information sources include impact analyses, stipulations, and best management practices included in the Integrated Activity Plan (IAP) for NPR-A (BLM 2013). Although the IAP did not address noise as a specific issue topic, noise was a factor considered in analyses conducted for several topics related to wildlife and subsistence. The Record of Decision (ROD) for the IAP includes several specific requirements for permitted aviation activities (see Best Management Practice F1, ROD pages 65-67; also see BLM 2017) that are intended to avoid, minimize, or mitigate aircraft disturbances on wildlife and subsistence activities. These include spatial and seasonal buffers, in addition to minimum flight altitudes (contingent on flight safety considerations). * Long-term acoustic monitoring. No long-term monitoring has been established in the 1002 Area for the purpose of detecting future changes in acoustic conditions and attributing such changes to particular activities including those associated with oil and gas exploration and development.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Tim	Whitehouse	PEER	95601	6	Acoustic Environment	What studies/surveys need to be conducted to fill those information gaps? * Baseline acoustic conditions should be quantified for those specific geographic locations and time periods where and when anticipated / proposed development activities are expected to coincide with high resource sensitivity (see list above under What we Need to Know and Why). Costs will be contingent on the scope of the data collection effort necessary for accurately characterizing baseline acoustic conditions for key locations and time periods. Design parameters such as the number and locations of monitoring sites, and the timing and duration of data collection should be determined jointly by subject matter specialists with expertise in anticipated development activities, specific noise-sensitive resources, and acoustic monitoring and analysis. Based on past work experience, contractors with appropriate acoustic expertise may include HDR Alaska Inc. (contractor for the Point Thomson EIS, including acoustic work), and HMMH, Inc. (a firm with specialized experience in acoustics and Federal projects). * Acoustic characteristics of specific development-related noise sources should be determined through direct measurements of analog noise sources or should be provided by project proponents in the form of a noise emissions inventory for each phase of development. * Modeled spatial predictions of acoustic impacts should be conducted for purposes of impact assessment, disclosure, and mitigation associated with proposed development activities. * Disturbance-response research	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Baseline ambient noise information would be gathered closer to the time of project development to more accurately reflect background conditions at the point in time when development of the 1002 Area begins to occur.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	should be conducted to satisfy specific information needs for understanding, assessing, disclosing, and mitigating impacts of development-related noise on noise-sensitive resources. Priorities for this type of research should be identified in collaboration with subject matter experts for specific noise-sensitive resources. * Long-term acoustic monitoring should be designed and implemented by BLM or USFWS staff (or appropriate cooperators / contractors) with expertise on the topics of acoustic engineering and environmental monitoring. This should be done in close collaboration with subject matter experts for specific noise-sensitive resources. As noted above, long-term acoustic monitoring (or the lack thereof) in NPR-A has potential implications for development planning and impact mitigation in the 1002 Area. Although recent work by Stinchcomb (2017) provides important baseline acoustic data for NPR-A, further acoustic research and monitoring is warranted to determine the effectiveness of Best Management Practice F1 (BLM 2013, pages 65-67) and aid in evaluating whether alternative or additional practices may be required to minimize effects of low-flying aircraft on subsistence resources, activities, and residents of Kaktovik as phases of oil and gas development progress in the 1002 Area.	(see above)
25.	—	—	United States Fish and Wildlife Service	97942	245	Acoustic Environment	Within the Acoustic environment, we recommend that the effects to natural quiet and the attempts to maintain natural quiet be discussed wherever natural sounds and noise are addressed.	The BLM has updated Section 3.2.3 of the Final EIS to discuss natural quiet.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Tim	Whitehouse	PEER	95601	2	Acoustic Environment	Several types of information are needed to understand, assess, and disclose potential impacts on the acoustic environment and noise-sensitive resources, and to provide a basis for decisions about lease stipulations and permit conditions necessary for avoiding, minimizing, or mitigating impacts to the extent possible. (For specific details regarding information needs for noise-sensitive resources themselves, see other sections that address polar bears, caribou, birds, subsistence activities and values, visitors and recreation, and wilderness values.) These information needs include: *Baseline (pre-development) acoustic conditions, including natural ambient sound levels and characteristics of baseline noise conditions such as magnitude, timing, duration, and frequency of occurrence of noise events. The metrics used for characterizing baseline conditions should be those that are most relevant to impact assessment and mitigation, and may vary among different types of noise sensitive resources. For example, metrics that characterize the frequency and duration of abrupt noise events loud enough to trigger disturbance responses in wildlife and metrics that characterize average hourly noise levels both may be important for describing baseline conditions. Baseline data are required for those specific time periods and specific geographic locations when and where noise from proposed development activities is expected to coincide with periods and locations of high resource sensitivity, considering factors that affect noise propagation and	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Because the hypothetical development scenario represents a level of development and not the actual locations of future project elements, no noise modeling was undertaken. Noise analyses will occur at the project level once specific projects have been proposed. Baseline ambient noise information would be gathered at that time to more accurately reflect actual background conditions; noise analyses, which may include modeling, would reflect actual development proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	attenuation. Periods and locations of particularly high resource sensitivity may include those associated with: o Polar bear denning activities; o Caribou calving and post-calving activities; o Migratory bird breeding and brood-rearing activities; o Kaktovik (all periods of occupancy); o Subsistence activities beyond Kaktovik; o Visitor use on the coastal plain; and o Visitor use in designated Wilderness adjoining the 1002 Area. * Acoustic characteristics of specific development-related noise sources, including typical and maximum magnitude, timing, duration, and number of occurrences during time periods relevant to impact analysis and mitigation (analogous to an air emissions inventory necessary for predictive modeling of development-related impacts on air quality and air quality related values). Onethird octave band frequency resolution is preferred. * Modeled spatial predictions of acoustic impacts attributable to developmentrelated noise sources (i.e., noise propagation modeling.) Spatial noise propagation modeling is required for the purpose of estimating how developmentrelated noise would be expected to propagate and potentially impact noisesensitive resources depending on factors such as noise magnitude, distance from the noise source, ambient sound levels, atmospheric conditions, and landscape characteristics. * Disturbance-response information that quantitatively or qualitatively characterizes relationships between noise metrics and response metrics for noise-sensitive resources	

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	including wildlife, residents and subsistence users, and Refuge visitors on the coastal plain and in adjoining Wilderness. This information is necessary for assessing, disclosing, avoiding, minimizing, and mitigating potential noise impacts to the extent possible.	(see above)
27.	Tim	Whitehouse	PEER	95601	6	Acoustic Environment	What studies/surveys need to be conducted to fill those information gaps? * Baseline acoustic conditions should be quantified for those specific geographic locations and time periods where and when anticipated / proposed development activities are expected to coincide with high resource sensitivity (see list above under What we Need to Know and Why). Costs will be contingent on the scope of the data collection effort necessary for accurately characterizing baseline acoustic conditions for key locations and time periods. Design parameters such as the number and locations of monitoring sites, and the timing and duration of data collection should be determined jointly by subject matter specialists with expertise in anticipated development activities, specific noise-sensitive resources, and acoustic monitoring and analysis. Based on past work experience, contractors with appropriate acoustic expertise may include HDR Alaska Inc. (contractor for the Point Thomson EIS, including acoustic work), and HMMH, Inc. (a firm with specialized experience in acoustics and Federal projects). * Acoustic characteristics of specific development-related noise sources should be determined through direct measurements of analog noise sources or should be provided by	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Baseline ambient noise information would be gathered closer to the time of project development to more accurately reflect background conditions at the point in time when development of the 1002 Area begins to occur.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	project proponents in the form of a noise emissions inventory for each phase of development. * Modeled spatial predictions of acoustic impacts should be conducted for purposes of impact assessment, disclosure, and mitigation associated with proposed development activities. * Disturbance-response research should be conducted to satisfy specific information needs for understanding, assessing, disclosing, and mitigating impacts of development-related noise on noise-sensitive resources. Priorities for this type of research should be identified in collaboration with subject matter experts for specific noise-sensitive resources. * Long-term acoustic monitoring should be designed and implemented by BLM or USFWS staff (or appropriate cooperators / contractors) with expertise on the topics of acoustic engineering and environmental monitoring. This should be done in close collaboration with subject matter experts for specific noise-sensitive resources. As noted above, long-term acoustic monitoring (or the lack thereof) in NPR-A has potential implications for development planning and impact mitigation in the 1002 Area. Although recent work by Stinchcomb (2017) provides important baseline acoustic data for NPR-A, further acoustic research and monitoring is warranted to determine the effectiveness of Best Management Practice F1 (BLM 2013, pages 65-67) and aid in evaluating whether alternative or additional practices may be required to minimize effects of low-flying aircraft on subsistence resources, activities, and residents of Kaktovik	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	as phases of oil and gas development progress in the 1002 Area.	(see above)
28.	Brook	Brisson	Trustees for Alaska	98269	149	Acoustic Environment	First, the affected acoustic environment in the DEIS is deficient because it fails to identify an adequate baseline using accurate data on background ambient noise levels in the project area. In our scoping comments, we highlighted the need for BLM to gather sufficient baseline soundscape data for areas within and throughout the Coastal Plain. ⁷⁴³ That baseline data should have then been utilized in a noise impact study, including modeling of all development scenarios. Instead of gathering new data sufficient to establish an accurate and current baseline, BLM utilized data from the 2010 background acoustic monitoring study at Point Thomson. ⁷⁴⁴ Data collected nearly a decade ago outside the Coastal Plain does not constitute "a comparable description of existing acoustic environment in the program area," as the DEIS claims. ⁷⁴⁵ The Point Thomson study measured noise levels adjacent to the northwestern border of the Refuge, not the ambient noise levels within and throughout the Coastal Plain. ⁷⁴⁶ Moreover, Point Thomson is closer to the Prudhoe Bay complex, so ambient noise levels are likely to be different than those in the Refuge. Without first establishing an adequate baseline for this program area, BLM cannot effectively evaluate the impacts of oil and gas development on the soundscape of the Coastal Plain.	The gathering of baseline ambient noise level data is beyond the scope of this programmatic-level EIS. Because the hypothetical development scenario represents a level of development and not the actual locations of future project elements, no noise modeling was undertaken. Noise analyses will occur at the project level once specific projects and locations have been proposed. Baseline ambient noise information would be gathered at that time to more accurately reflect actual background conditions; noise analyses, which may include modeling, would reflect actual development proposals.

S.3.2 Air Quality

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	—	—	United States Fish and Wildlife Service	97942	205	Air Quality	The DEIS states that the location, timing, and level of future oil and gas development on the Coastal Plain is unknown at this time and that a qualitative air analysis is being performed. In the other Alaska projects mentioned in this section, quantitative analyses have been performed using a low, medium, and high projected level of development. This type of air analysis has provided informative data to the decision makers and the public. Additionally, further project specific air analysis can tier off of the quantitative air analysis. We recommend that Appendix B., Reasonably Foreseeable Development Scenario for Oil and Gas Resources, which quantifies the most likely unconstrained projected oil and gas baseline development scenario for the Coastal Plain, be used as a basis for a quantitative air analysis and to serve as a general estimate to determine the air quality impacts due to leasing and development.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Brook	Brisson	Trustees for Alaska	98269	144	Air Quality	Even setting aside the failure to analyze or condition leasing on a comprehensive set of mitigations, the DEIS is deficient because BLM failed to conduct the modeling necessary to adequately analyze air quality impacts, compare alternatives, and support conclusions about compliance with the Clean Air Act. BLM is required to independently estimate the emissions inventory, model air pollution impacts associated with each of the action alternatives, and compare these results to the baseline of Alternative A.728 The absence of modeling deprives the public and decision makers from understanding the air quality impacts of an oil and gas program and evaluating the potential tradeoffs and differences between alternatives - including between Alternative A and the action alternatives. Air quality modeling is a necessary tool for assessing future air pollutant impacts under NEPA and supporting BLM's conclusion that oil and gas activities would be unlikely to exceed health-based National Ambient Air Quality Standards and thresholds set to protect against adverse impacts to air quality related values. A quantitative modeling assessment of the air quality impacts from the alternative development scenarios, based on modeling of emissions associated with the specific assumptions for the development Alternatives - including the location and density of development - would be needed in order to understand whether or not impacts would be greater under certain alternatives for some pollutants, in some locations. BLM's failure to conduct modeling renders the DEIS deficient.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis/modeling. Given the absence of this information at the leasing stage, such quantitative analysis and modeling would not be helpful to a decision maker. The well counts and overall production levels are not anticipated to vary among the action alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Jill	Nogi	Environmental Protection Agency	71634	1, 2, 3, 4	Air Quality	Based on our review, one of our primary concerns is that the analysis does not adequately assess the potential cumulative impacts to air quality and air quality related values from implementing an oil and gas leasing program within the Coastal Plain. The document relies upon a qualitative, rather than quantitative, air quality analysis, and supports this decision largely upon an assertion that " ... a quantitative analysis would be highly speculative and result in a worst-case scenario outcome." The EPA disagrees with this statement, as representative, quantitative analysis is commonly conducted for NEPA analyses at the oil and gas planning stage, and information is currently available to conduct such an analysis to support informed decision making for oil and gas leasing in the Coastal Plain. Another concern is that the qualitative analysis relies upon comparison to other recent air quality analyses conducted by BLM and BOEM for oil and gas development in the Alaskan arctic region, including the Greater Mooses Tooth-2 project, stating, "Potential emissions from future development proposals are anticipated to be of a type and scale evaluated in the GMT-2 Final SEIS ... " This may be true of individual projects in the Coastal Plain, but the total potential future development is assumed to be significantly larger than GMT-2, as specified in Table 3-3 (21 to 143 million barrels annually, compared to 4.6 million barrels annually by GMT -2). Consequently, the total potential emissions are expected to be far greater than GMT -2, possibly up to 30 times higher (if emissions are assumed to scale linearly with annual oil production). This difference in scope demonstrates that the DEIS is too narrowly focused	As described in the Draft EIS, the BLM is undertaking the Cumulative Alaska North Slope Air Quality Regional Model to assess the cumulative effects of BLM-authorized oil and gas development throughout the North Slope, including on the Coastal Plain. This study will expand on the Bureau of Ocean Energy Management (BOEM) study to provide an up-to-date assessment of the potential cumulative effects of North Slope onshore and offshore oil and gas development on air quality and air quality related values (AQRVs) in the region. The BLM anticipates that this model will provide the foundation for future updated NEPA analyses. Because the BLM expects that the growth of oil and gas activities on the North Slope will continue for many years, the model will be updated periodically, pending funding availability, to reflect actual development rates and locations. This will allow the BLM, other federal land managers, and the state to monitor the effects oil and gas development on air quality and AQRVs so that appropriate measures can be put in place to minimize the impacts on these resources as needed. The modeling study would not be tied to a specific NEPA effort; rather, it would be used to inform future oil and gas-related NEPA analyses on the North Slope. The first modeling study is expected to be completed in 2020, well before development begins in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	on future project-specific impacts, rather than on the potential cumulative impacts of the proposed leasing program overall. Further, as acknowledged in the DEIS, the cumulative air quality analyses conducted previously by BLM and BOEM did not include oil and gas development in the Coastal Plain, and therefore are not relevant to an analysis of the potential cumulative impacts to air quality within the program area. These issues further support our recommendation that an adequate assessment of the potential cumulative impacts to air quality and AQRVs is still needed in the EIS. To support informed decision-making regarding areas to offer for oil and gas leasing and the terms and conditions to be applied, we continue to recommend that the EIS consider air pollutant emissions likely to occur on the leases, and the potential impacts to air quality and air quality related values from these emissions. Although additional air quality analysis may be required prior to authorization of future activity in the program area, per Required Operating Procedure 6 (pg. 2-17), such project-specific analyses would only be conducted on a case-by-case basis and would not be of an appropriate scope and scale to assess the cumulative impacts of the overarching Coastal Plain leasing program. We continue to recommend that the BLM convene an air quality technical workgroup to discuss an appropriate methodology for a quantitative air quality analysis to support this planning-level decision, beginning with development of an emissions inventory.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Jill	Nogi	Environmental Protection Agency	71634	14, 15	Air Quality	Air Quality Related Values: The document concludes, based on past analyses, that future development projects in the Coastal Plain are unlikely to result in violation of the air quality standards and air quality related values. We recommend that this statement be amended to indicate that future projects are unlikely to significantly impact AQRVs in Class I areas. We are concerned that significant impacts to AQRVs could occur in the Arctic National Wildlife Refuge itself. The document directs attention to the nitrogen deposition impacts of the GMT-2 project on the Arctic Refuge (0.025 kilograms/hectare-year). This value significantly exceeds the 0.010 kg/ha-yr deposition analysis threshold for nitrogen, established by the Federal Land Managers in the FLAG 2010 4 guidance document. Given that the GMT-2 project is located over 100 miles away from the Arctic Refuge, and GMT-2 emissions are much less than the total potential emissions of projects within the Coastal Plain (based on a comparison of annual oil production in Table 3-3), nitrogen deposition impacts from future development could be a concern, and warrant analysis in the EIS. We understand that high levels of acid deposition could possibly result in damage to vegetation, and the wildlife that depend on this vegetation, within the Arctic Refuge. Our review finds that the DEIS does not identify the possibility or provide a sufficient evaluation of these potential significant impacts, and we recommend that a more robust evaluation of regional acid deposition impacts be conducted for the proposed leasing program, based on reasonable assumptions of emissions from future projects. The evaluation should offer sufficient	The BLM agrees with and has revised the Final EIS to indicate that AQRVs in Class I areas are not expected to be affected significantly because of the distance from the program areas to the nearest such area. In terms of impacts on the Arctic National Wildlife Refuge, the purpose of Federal Land Managers' Air Quality Related Values Work Group Report (FLAG) is twofold: (1) to develop a more consistent and objective approach for the federal land managers to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas, especially in the review of Prevention of Significant Deterioration (PSD) of air quality permit applications. The Arctic National Wildlife Refuge is a Class II area; therefore, the threshold is not applicable. Acid deposition impacts from site-specific projects may be analyzed in subsequent NEPA analyses when the location, timing, and scope of activities are understood; these are absent at the leasing stage.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	analysis to determine whether acid deposition impacts from oil and gas development could pose a risk to protected vegetation and wildlife within the Refuge.	(see above)
5.	Jill	Nogi	Environmental Protection Agency	71634	9, 10	Air Quality	We continue to recommend that the BLM convene an air quality technical workgroup, in accordance with the "Memorandum of Understanding Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process" signed by the EPA, U.S. Department of Agriculture, and U.S. Department of Interior on June 11, 2011, which applies to federal decisions relating to on-shore oil and gas planning, leasing, or field development. We recommend that the technical workgroup discuss the preparation of a quantitative air quality analysis. According to the MOU, the first step in such an analysis would be to develop an emissions inventory based upon the reasonably foreseeable development scenario. For planning level analyses, the MOU suggests developing a range of scenarios (e.g., low, medium, high), which addresses the concern expressed in the DEIS that a quantitative analysis would be "worst-case." We continue to recommend that the technical workgroup then use the emissions inventory to determine the appropriate next steps in the analysis.	Section V.C.1. of the Memorandum of Understanding in part states, "When the Lead Agency determines through NEPA scoping, the air quality or AQRVs will be significantly impacted by a proposed action, the Lead Agency will convene a technical workgroup for that proposed action composed of the Agencies to provide advice about the analysis." Before initiating the EIS, the BLM considered whether the action may result in significant impacts on air quality or AQRVs, and determined it would not; therefore, the air quality technical workgroup was not convened. Further, the analysis in the Draft EIS is consistent with this determination. Unlike specific development projects, where location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	—	79888	4	Air Quality	The DEIS did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development on the environment and on human health	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
7.	Jane	Heisler	—	54194	2	Air Quality	Your EIS also fails to meaningfully evaluate potential impacts to air quality that would result from oil and gas activities on the Coastal Plain. BLM made no attempt to quantify emissions of pollutants produced from oil and gas leasing and their impact on human health and the environment.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Craig	Mishler	—	31305	3	Air Quality	The draft EIS fails to quantify emissions of pollutants or address the impacts of air quality on people, animals, and the health of the region. North Slope activities indicate that oil and gas development has significant impacts on air quality and visibility.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
9.	Withheld	Withheld	—	94435	5	Air Quality	The DEIS failed to meaningfully evaluate potential impacts of oil and gas activities on air quality in the Arctic Refuge. The BLM concluded i that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be “unlikely” to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis. The DEIS did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development on the environment and on human health.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	6	Air Quality	The BLM concluded that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be “unlikely” to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis. The DEIS did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development on the environment and on human health.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
11.	Withheld	Withheld	—	92034	10	Air Quality	The DEIS failed to meaningfully evaluate potential impacts of oil and gas activities on air quality in the Arctic Refuge. The BLM concluded i that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be “unlikely” to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis. The DEIS did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development on the environment and on human health.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Withheld	Withheld	—	96175	8	Air Quality	Please quantify emissions of pollutants produced from oil and gas leasing and their impact on human health and the environment. Both "direct" and "indirectly". The sections on this area do not go into concrete details	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
13.	Withheld	Withheld	—	75705	5	Air Quality	ir: The DEIS failed to meaningfully evaluate potential impacts of oil and gas activities on air quality in the Arctic Refuge. The BLM concluded i that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be "unlikely" to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis. The DEIS did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development on the environment and on human health.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Tim	Hogan	—	54762	1	Air Quality	The DEIS fails to provide relevant analysis on how drilling will affect air quality on the Coastal Plain, throwing out perfunctory statements that oil and gas fields on the Coastal Plain would be “unlikely” to compromise air quality standards.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
15.	Withheld	Withheld	—	75145	11	Air Quality	The DEIS failed to meaningfully evaluate potential impacts of oil and gas activities on air quality in the Arctic Refuge. The BLM concluded that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be “unlikely” to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Withheld	Withheld	—	79888	3	Air Quality	The BLM concluded i that future projects on the Coastal Plain of the Arctic National Wildlife Refuge would be “unlikely” to exceed important air quality standards, but it failed to support this conclusion with sufficient analysis.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.
17.	Steven	Amstrup	Polar Bears International	81368	93	Air Quality	BLM can, and should, analyze impacts based on emissions estimates typically used for onshore oil and gas development sources on the North Slope, even if estimates cover a range of potential values.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker at this stage. Since limited information exists to estimate air quality impacts for all action alternatives, a site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and to identify any measures necessary to reduce impacts on air quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Brook	Brisson	Trustees for Alaska	81368	79	Air Quality	In order to comply with 40 C.F.R. §1502.24 (to ensure the professional and scientific integrity of the air quality analysis), the air quality analysis should use EPA-preferred models and modeling practices specified in EPA's recently-updated Guideline on Air Quality Models (40 C.F.R. Part 51, Appendix W)	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.
19.	Megan	Williams	o.b.o. Trustees for Alaska	81368	79	Air Quality	In order to comply with 40 C.F.R. §1502.24 (to ensure the professional and scientific integrity of the air quality analysis), the air quality analysis should use EPA-preferred models and modeling practices specified in EPA's recently-updated Guideline on Air Quality Models (40 C.F.R. Part 51, Appendix W)	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.
20.	Brook	Brisson	Trustees for Alaska	81368	78	Air Quality	Air quality modeling is the only way to evaluate how emissions sources will impact air quality aside from direct monitoring, which is only able to measure real-time pollution levels at the location of the monitoring device. BLM must prepare a modeling analysis of the direct, indirect, and cumulative impacts on air quality that could occur under the various alternatives considered for the leasing DEIS. For each alternative, a comprehensive emissions inventory should be developed and used as input to an air quality dispersion modeling analysis in order to fully assess the impacts on air quality throughout the region from an oil and gas program on the Coastal Plain.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.

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21.	Brook	Brisson	Trustees for Alaska	81368	81	Air Quality	Pollutant levels that are lower than the NAAQS are not necessarily without risk for all individuals. And many of EPA's air quality standards are set to protect against short-term exposures that can cause harm, meaning even visitors to the Coastal Plain can be adversely impacted by exposures to hourly and daily pollution levels (e.g., of ozone, NO ₂ , SO ₂ , and particulate matter). The maximum emission rates from sources over the averaging times of the standard for which impacts are being assessed should be modeled.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.
22.	Megan	Williams	o.b.o. Trustees for Alaska	81368	82	Air Quality	The modeling analysis should be based on meteorological input data according to EPA's Guideline on Air Quality Models. See, e.g., Section 8.4 of EPA's Guideline on Air Quality Models at 40 C.F.R. Part 51, Appendix W.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis/modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.
23.	Megan	Williams	o.b.o. Trustees for Alaska	81368	83	Air Quality	For the NAAQS analysis, appropriate background concentrations reflective of current air quality in the area should be added to the modeling results.	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Brook	Brisson	Trustees for Alaska	81368	73	Air Quality	A quantitative modeling assessment of the air quality impacts from the Alternative development scenarios, based on modeling of emissions associated with the specific assumptions for the development Alternatives - including the location and density of development - would be needed in order to understand whether or not impacts would be greater under certain Alternatives for some pollutants, in some locations. Absent such an assessment, BLM has not demonstrated and cannot demonstrate that its Alternatives ensure no significant air quality impacts and full compliance with the Clean Air Act (CAA).	Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker. The air quality impacts do not vary across the action alternatives.
25.	Withheld	Withheld	—	68965	56	Air Quality	27. Chapter 3; section 3.2.2, page 3-16 to 3-17, Air Quality Cumulative Effects. This analysis is entirely inadequate. As presented, the analysis appears to refer to past EIS analyses like that for the GMT2 project as the best available baseline, and then goes on to say that no cumulative effects analysis for air quality that includes the Coastal Plain has been done, but studies are being developed. The purpose of this EIS is to present that cumulative analysis, now, using current best available information. You can't simply say, "We're working on it," and claim that as a meaningful cumulative effects analysis.	See the response to AIR-3 regarding cumulative effects.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Withheld	Withheld	—	96867	2	Air Quality	3-17 “As described above, the cumulative analyses for the GMT2 Final SEIS and the BOEM Arctic Air Quality Modeling Study did not account for proposed oil and gas development in the Coastal Plain, and therefore the potential cumulative effects of future oil and gas activities are not fully known at this time. As described by ROP 6, the direct, indirect, and cumulative effects of proposed oil and gas development proposals would be analyzed at the time of a specific project proposal to fully assess the effect of Coastal Plain development on air resources.” Unacceptable to leave this for the future.	See the response to AIR-3 regarding cumulative effects.
27.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	92	Air Quality	BLM must perform a cumulative analysis of air quality impacts that could occur under all of the alternatives, including the no-action alternative. Specifically, the cumulative analysis must include impacts from all existing sources and reasonably foreseeable sources of air emissions that could impact the same area impacted by the proposed alternatives.	See the response to AIR-3 regarding cumulative effects.
28.	Brook	Brisson	Trustees for Alaska	81368	94	Air Quality	BLM must include a quantitative analysis of the cumulative impacts to air quality and air quality related values of an oil and gas program on the Coastal Plain along with all other existing and reasonably foreseeable future sources of air pollution in the area.	See the response to AIR-3 regarding cumulative effects.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Steven	Amstrup	Polar Bears International	81368	90	Air Quality	BLM must perform a far-field modeling analysis of the impacts from the direct and indirect emissions from an oil and gas program to assess whether the specific activities under the considered alternatives would adversely impact air quality in any Class I or sensitive Class II areas.	The purpose of FLAG is twofold: (1) to develop a more consistent and objective approach for the federal land managers to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas, especially in the review of PSD of air quality permit applications. The Arctic National Wildlife Refuge is a Class II area; therefore, the threshold is not applicable. Acid deposition impacts from site-specific projects may be analyzed in subsequent NEPA analyses when the location, timing, and scope of activities are understood; these are absent at the leasing stage.
30.	Brook	Brisson	Trustees for Alaska	81368	90	Air Quality	The analysis should include all Class I and sensitive Class II areas that could be impacted by emissions from the proposed oil and gas program.	The purpose of FLAG is twofold: (1) to develop a more consistent and objective approach for the federal land managers to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas, especially in the review of PSD of air quality permit applications. The Arctic National Wildlife Refuge is a Class II area; therefore, the threshold is not applicable. Acid deposition impacts from site-specific projects may be analyzed in subsequent NEPA analyses when the location, timing, and scope of activities are understood; these are absent at the leasing stage.

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31.	Brook	Brisson	Trustees for Alaska	98269	147	Air Quality	Although visibility is integral to the wilderness characteristics, aesthetics, and recreational values of the Coastal Plain and adjacent Mollie Beattie Wilderness, the DEIS fails to analyze haze and other air quality impacts on Class I and sensitive Class II airsheds. ⁷³⁶ BLM cannot merely rely on conclusory statements that future projects on the Coastal Plain would be “unlikely” to violate important air quality standards and visibility. Current operations on the North Slope have proven otherwise. ⁷³⁷	The purpose of FLAG is twofold: (1) to develop a more consistent and objective approach for the federal land managers to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas, especially in the review of PSD of air quality permit applications. The Arctic National Wildlife Refuge is a Class II area; therefore, the threshold is not applicable. Acid deposition impacts from site-specific projects may be analyzed in subsequent NEPA analyses when the location, timing, and scope of activities are understood; these are absent at the leasing stage.

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32.	Steven	Amstrup	Polar Bears International	81368	95	Air Quality	It's critical that BLM, in carrying out its commitments under the terms of the "Memorandum of Understanding Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process," ¹⁶ (air quality MOU) convene a technical air quality work group, to include signatory agencies and relevant State agencies (e.g., Alaska Department of Environmental Conservation (ADEC)), to collectively agree upon a modeling protocol and review results. BLM's failure to utilize the expertise of these agencies to ensure air quality modeling conducted as part of this NEPA analysis thoroughly and accurately discloses the effects of all phases of oil and gas development on air quality on the Coastal Plain raises serious questions as to scientific integrity and transparency of this NEPA process.	Section V.C.1. of the Memorandum of Understanding in part states, "When the Lead Agency determines through NEPA scoping, the air quality or AQRVs will be significantly impacted by a proposed action, the Lead Agency will convene a technical workgroup for that proposed action composed of the Agencies to provide advice about the analysis." Before initiating the EIS, the BLM considered whether the action may result in significant impacts on air quality or AQRVs, and determined it would not; therefore, the air quality technical workgroup was not convened. Further, the analysis in the Draft EIS is consistent with this determination. Unlike specific development projects, where the location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis or modeling. Given the absence of this information at the leasing stage, such quantitative analysis or modeling would not be helpful to a decision maker.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Jill	Nogi	Environmental Protection Agency	71634	13	Air Quality	We also note that EPA comments on other oil and gas development projects, such as GMT-2, indicated that 1-hour NO ₂ concentrations at the fence line were of sufficiently high levels to warrant a closer look to determine if they were above the National Ambient Air Quality Standards. For example, GMT-2 modeling demonstrated 1-hour NO ₂ impacts very near to the 1-hour NO ₂ NAAQS under all scenarios. Given the greater emissions expected from development in the Coastal Plain as compared to GMT-2, there is the possibility that NO ₂ impacts from such Coastal Plain projects could exceed the NO ₂ NAAQS or create a Prevention of Significant Deterioration increment exceedance. We recommend that the Coastal Plain EIS focus on the need for a robust air quality analysis for all future projects rather than relying upon these qualitative comparisons.	See the responses to AIR-1 through AIR-3 regarding the methodology used for the Coastal Plain EIS. As described by ROP 6, which has been updated in the Final EIS, quantitative NEPA analyses will be performed when site-specific proposal applications are submitted to the BLM. The BLM's Alaska North Slope Air Quality Regional Model will model National Ambient Air Quality Standards (NAAQS) concentrations and PSD increments; it will provide an ongoing assessment of air quality conditions in the North Slope and at sensitive locations such as at the Arctic National Wildlife Refuge.
34.	Jill	Nogi	Environmental Protection Agency	71634	17	Air Quality	Other Air Quality Comments: The document discusses the potential increase in air traffic around the city of Kaktovik. We recommend that potential impacts to air quality and health for residents of Kaktovik be addressed in the analysis.	The BLM has added a qualitative discussion of the potential impacts from the increase in air traffic at Kaktovik to Section 3.2.2 of the Final EIS.
35.	Julia	Wagner	—	83570	8	Air Quality	When the air in the other parts of the Coastal Plain is being contaminated by the development industry facilities, contamination of the land and the waters of the whole plain will occur by precipitation, as stated in the DEIS itself: „These post-lease activities would emit air pollutants from a variety of sources during exploration, development, and production. These pollutants could affect air quality and AQRVs on the Coastal Plain and in nearby areas.” (3-12)	Deposition is described on page 3-12 of the Draft EIS. As noted by the commenter, post-lease activities would emit air pollutants and potentially contribute to deposition effects in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Natalie	Dawson	—	81061	7	Air Quality	Air quality: Has not been adequately performed in NPR-A, will need to take place over length of time encompassing and beyond all activities around oil and gas leasing and drilling; required under NEPA to have quantitative AQ and AQRV analyses prior to development on federal lands including the Coastal Plain; this modeling needs to include near-field monitoring (AERMOD) and far field monitoring (NSRAQM); also needs to include worst-case predictions of air quality monitoring; this monitoring should not be done by industries that are part of development or subsidiaries, because of conflicts of interest. It should be done by outside organizations such as ACAT and local communities with capacity for funding built into the costs of the lease sales; analyses for NPR-A lands are out-of-date and timeline and costs are not accurate for what is necessary in the 1002 Coastal Plain; for each stage of development specific project descriptions should include: number, size and location of wells, number of pads, estimates of air emissions, number and locations of roads, specific and auxiliary equipment use, supplemental power, construction activity, geographic proximity of sensitive resources, topography and emissions magnitude.	The adequacy of analysis in the National Petroleum Reserve in Alaska (NPR-A) is outside the scope of this EIS; however, the BLM has an updated Integrated Activity Plan EIS for the NPR-A that has included a non-industry-prepared quantitative analysis of air quality and AQRVs. This analysis was prepared with input from cooperating agencies and members of the air quality technical working group convened pursuant to the 2011 Air Quality MOU. Cooperating agencies and working group participants reviewed the methodology and work products for this analysis..

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Megan	Williams	o.b.o. Trustees for Alaska	81368	72	Air Quality	Depending on where the lease sales occur and the density of development, it's possible that greater impacts to human health and air quality related values will result under the different Alternatives. If, under certain Alternatives, more concentrated development were to occur closer to the Native Village of Kaktovik or areas with more concentrated recreational or subsistence uses, for instance, it would be important for BLM to evaluate and disclose the potential for greater air quality impacts to those areas in the DEIS.	Based on currently available information and the uncertainties described in Appendix B (page B-7), it is difficult to ascertain at this time the location or concentration of development that may occur under each alternative; however, because not all scenarios in the alternatives may have the same impact, the BLM has added a qualitative discussion of potential air impacts, based on density and proximity of development to areas of interest, to the Final EIS.
38.	Steven	Amstrup	Polar Bears International	81368	74. 75	Air Quality	The scope of BLM's analysis for the DEIS should include all reasonably foreseeable impacts from exploration (including pre-leasing seismic surveying), development, production, and reclamation activities. It is important that BLM evaluate the impacts to air quality and air quality related values from the various activities associated with all program phases and consider the overlapping impacts from all emissions sources that could reasonably occur at the same time. For example, the combined impacts of exploration, development (construction), production, and reclamation activities must be evaluated in parallel if these activities could be reasonably assumed to occur simultaneously on the Coastal Plain in any given year. It's possible seismic surveying and exploratory drilling activities have the potential to generate short-term emissions at an intensity that could produce localized ambient concentrations of short-term NO2 and particulate matter (PM) in excess of the NAAQS.	Please see the responses to AIR-1 through AIR-3 regarding the scope of analysis for the Coastal Plain Draft EIS. For the reasons described in Appendix B of the Draft EIS (page B-7), including the uncertainties surrounding the amount and location of technically and economically recoverable oil, it is difficult to estimate at this time what the pace of development would be and therefore what activities would overlap at a given time or in a given year. Site-specific proposals for seismic surveying, exploration, and development will include a more detailed level of NEPA analysis, including a cumulative analysis that takes into account other activities in the project area.

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39.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	76	Air Quality	BLM also states that, "[t]he seismic survey activities evaluated in the BOEM emissions inventory report (BOEM 2014, page III-1) would be similar in scale to seismic survey activities on the Coastal Plain (Brumbaugh pers comm 2018)."6 However, BOEM's 2014 emissions inventory is for offshore survey activities (e.g., including marine survey vessels and support vessels, icebreakers, etc.) and therefore does not account for emissions from heavy vehicle traffic, ground or air re-supply activity, generator engines needed to sustain large camps, fuel storage tanks, and rubber tracked vibrators needed for onshore seismic survey operations. BLM cannot rely on BOEM's offshore impact analysis as representative of onshore seismic survey and exploration activities on the Coastal Plain.	The BOEM emissions inventory report included an emissions inventory for offshore seismic surveys in the outer continental shelf areas and an emissions inventory for onshore seismic surveys in North Slope oil and gas fields. The Draft EIS text referenced in BOEM 2014, page III-1 describes the onshore sources included in the emissions inventory, which include the sources referenced in the comment. As such, the referenced BOEM text is appropriate for comparison to potential seismic survey activities that would occur on the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Jill	Nogi	Environmental Protection Agency	71634	11	Air Quality	We are aware that the BLM is making progress toward completing a North Slope Regional Air Quality Model and recommend that the technical workgroup consider whether this model could be utilized in the quantitative air quality analysis to efficiently support decision making for the Coastal Plain Leasing Program.	The North Slope Air Quality Regional Model is being prepared to support management actions affecting the NPR-A, the North Slope, Prudhoe Bay, and other oil and gas-producing areas such as the Coastal Plain. The model is being developed with input from the air quality technical workgroup. It will model air quality and AQRV impacts as oil and gas development progresses over time, which will support decision-making for oil and gas-related actions throughout the North Slope, including actions in the Coastal Plain. While this model will not be available for this Leasing EIS, it is anticipated to be completed in 2020 and will be available to support future oil and gas development proposals. As described in Table B-3 of Appendix B in the Final EIS, the first exploration action is not anticipated to occur until 7 years after the first lease sale.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Megan	Williams	o.b.o. Trustees for Alaska	81368	96	Air Quality	BLM mentions in the DEIS that it "is undertaking its own study, the Cumulative Alaska North Slope Air Quality Regional Model, to assess the cumulative effects of BLM-authorized oil and gas development on the North Slope, including on the Coastal Plain." ¹⁷ According to the DEIS, BLM intends for this modeling effort to inform future oil and gas-related development on the North Slope. Importantly, BLM indicates that, "the model would be updated periodically to reflect actual development rates and locations, allowing the BLM, other federal land managers, and the state to monitor the effects oil and gas development is having on air quality and AQRVs so that appropriate measures can be put in place to minimize the impact on these resources as needed." ¹⁸ The results of this analysis are needed prior to finalizing the DEIS for an oil and gas program on the Coastal Plain and BLM must provide an opportunity for the public to review and comment on the analysis prior to incorporating the results into a final action on the oil and gas program on the Coastal Plain.	The North Slope Air Quality Regional Model is being prepared to support management actions affecting the NPR-A, the North Slope, Prudhoe Bay, and other oil and gas-producing areas. While it will inform future NEPA analyses throughout the North Slope, it is not intended to be associated with any single NEPA action, such as this Leasing EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Megan	Williams	o.b.o. Trustees for Alaska	81368	109	Air Quality	In order to accurately reflect changing conditions and improved estimation techniques, BLM should commit to updating the Cumulative Alaska North Slope Air Quality Regional Model analysis every three years. This will allow BLM to: (1) periodically evaluate advances in mitigation technologies and operating practices in order to better inform future decisions on leasing development; and (2) establish Best Management Practices / Stipulations that are based on the latest science. Examples of this approach include: (1) Utah BLM's Air Resource Management Strategy (ARMS); ⁶⁷ and (2) Colorado BLM's Comprehensive Air Resource Protection Protocol (CARPP), which commits to periodic review (no less than every three years) of the associated Colorado Air Resource Management Modeling Study (CARMMS), originally completed in January 2015 and updated two times since then, including most recently in August 2017. ^{68,69}	The Alaska North Slope Air Quality Regional Model is being designed to function similarly to the regional modeling studies referenced in the comment, including performing updates every 3 to 5 years as new input data become available, subject to funding availability. This will allow the BLM to monitor air quality conditions as development on the North Slope proceeds over time.
43.	Tim	Whitehouse	PEER	95601	11	Air Quality	Far-field (North Slope Regional Air Quality Modeling - NS RAQM) and Near-field modeling (AERMOD) will need to be modified to incorporate the Arctic 1002 area, through extension of a current BLM contract, a new agency contract, or with additional agency personnel.	The North Slope Regional Air Quality Modeling study will incorporate the 1002 Area in its model domain area.

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44.	Megan	Williams	o.b.o. Trustees for Alaska	81368	97	Air Quality	BLM must complete an analysis to determine how much of the incremental amount of air pollution allowed in clean air areas (i.e., PSD increment) has already been consumed in the affected area and how much additional increment consumption will occur due to the proposed oil and gas program on the Coastal Plain. Without this analysis, the BLM is not adequately ensuring that air quality will not deteriorate more than allowed under the CAA.	It is outside the scope of the BLM's authority to perform PSD increment consumption analyses; regulatory authority for such analyses is with the Alaska Department of Environmental Conservation (ADEC). The BLM's Alaska North Slope Air Quality Regional Model will compare PSD model results with PSD increments to inform decision makers. The first modeling study is expected to be completed in 2020; the model will be updated every 3 to 5 years, pending funding availability, to provide an ongoing assessment of air quality conditions in the North Slope and at sensitive locations such as the Arctic National Wildlife Refuge.
45.	Steven	Amstrup	Polar Bears International	81368	98	Air Quality	BLM did not address the prevention of significant deterioration of air quality	It is outside the scope of the BLM's authority to perform PSD increment consumption analyses; regulatory authority for such analyses is with the ADEC. The BLM's Alaska North Slope Air Quality Regional Model will compare PSD model results with PSD increments to inform decision makers. The first modeling study is expected to be completed in 2020; the model will be updated every 3 to 5 years, pending funding availability, to provide an ongoing assessment of air quality conditions in the North Slope and at sensitive locations such as the Arctic National Wildlife Refuge.

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46.	Brook	Brisson	Trustees for Alaska	81368	98	Air Quality	in the DEIS except to say that it is unlikely that a future project-specific proposal on the Coastal Plain would exceed an PSD increment. ⁵⁹ And as noted previously, BOEM's analysis of new oil and gas sources shows that a sizable portion of the PSD Class II increments (e.g., for PM _{2.5}) would already be consumed in the Arctic National Wildlife Refuge 1002 area and the Arctic National Wildlife Refuge Wilderness Area.	As noted by the commenter, the Draft EIS stated that future project-specific proposals on the Coastal Plain would be unlikely to exceed a project-level PSD increment. The Draft EIS further stated that because air quality conditions at the time of future project proposals would be different than air quality conditions today and because oil and gas development on the North Slope is expected to increase and contribute to cumulative air quality impacts over time, each project-specific NEPA analysis would require a determination of potential direct, indirect, and cumulative impacts on air quality and AQRVs. This would include a comparison of modeled results with PSD increments. In addition, the BLM's Alaska North Slope Air Quality Regional Model will compare PSD model results with PSD increments to inform decision makers. The first modeling study is expected to be completed in 2020; the model will be updated every 3 to 5 years, pending funding availability, to provide an ongoing assessment of air quality conditions in the North Slope and at sensitive locations such as the Arctic National Wildlife Refuge. The model is being developed with input from BOEM, the ADEC, the United States Fish and Wildlife Service (USFWS), and other stakeholders.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Steven	Amstrup	Polar Bears International	81368	99	Air Quality	None of the Lease Stipulations in the DEIS address air quality. And none of the Required Operating Procedures (ROPs) - with the exception of ROP 5, which includes a provision that all oil and gas operations (vehicles and equipment) that use diesel fuels must use ultra-low sulfur diesel, as defined by EPA60 - include enforceable requirements to address air quality. Specifically, ROP 6 - to Prevent unnecessary or undue degradation of the lands and protect health - includes the following discretionary provisions: a. The BLM Authorized Officer may require baseline ambient air monitoring for any pollutant of concern, as determined by BLM b. The BLM may require monitoring for the life of the project, depending on the project magnitude, location, and other measures as identified by BLM c. The BLM may require an emissions inventory d. The BLM may require an emissions reduction plan / operator-committed measures e. The BLM may require air quality modeling f. The BLM will require additional mitigations measures to address any modeled exceedances of NAAQS/AAQS or levels of concerns for AQRVs g. The BLM may require changes in activities, within the scope of BLM's authority, to minimize or reduce impacts through additional emission control strategies if air monitoring indicates that project-related emissions are causing or contributing to NAAQS exceedances or degrading the lands⁶¹	Lease stipulations are not the appropriate protection tool for all resource programs; lease stipulations are generally applied to protect on-the-ground resources such as waterbodies or sensitive habitat areas. For this program, ROPs were deemed the appropriate tool for managing air quality protection over the life of oil and gas development in the Coastal Plain. The ROP 6 elements were developed in coordination with the State of Alaska as the provisions that would be applied to future development proposals to ensure that specific projects would not have an adverse impact on air quality. Because not every provision would need to be applied for every development proposal in order to assess or protect air quality, the ROP language was written as reflective of what may be required at each application stage and serves to inform BLM staff and industry of what provisions may be required for project approval. The decision on what provisions will be required will be determined at the time of application and will depend on the timing, location, and scale of the proposal and the results of project-specific air quality analyses. That said, the BLM has modified ROP 6 in the Final EIS to align with the ROP for the NPR-A Integrated Activity Plan (IAP) EIS, which is now under development. This ROP lays out the anticipated requirements for future NEPA air analysis more clearly, and it aligns the requirements across the two program areas to provide certainty to developers about future requirements and assurances to agencies and the public that air

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	quality will be considered and protected across all stages of oil and gas development.
48.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	105	Air Quality	BLM should rigorously explore and objectively evaluate reasonable measures to avoid PM10 and PM2.5 impacts from an oil and gas program, including: (1) the use of dust suppression practices on all unpaved roads; (2) applying Tier 4 engine technology that includes a diesel particulate filter (DPF); and (3) requiring all diesel vehicles to use DPF technology. Reasonable alternatives to reduce PM emissions that BLM should rigorously explore and objectively evaluate also include reducing the pace and intensity of development and using remote monitoring systems to reduce the extent of on-site inspections and associated mobile source emissions.	ROP 5 of the Draft EIS requires the use of low sulfur diesel fuel. Other measures to reduce or avoid particulate emissions will be applied at the project-level stage based on the results of a site-specific NEPA analysis by the BLM or as conditions of approval in permits issued by the ADEC, Division of Air Quality.
49.	Steven	Amstrup	Polar Bears International	81368	106	Air Quality	BLM should rigorously explore and objectively evaluate reasonable measures to avoid unacceptable health risks from near field HAPs concentrations and ozone and climate impacts caused by the proposed alternative(s), including: (1) prohibiting venting and flaring except in emergencies; (2) the application of high-efficiency compressor technologies and practices; and (3) advanced leak detection and repair protocols.	Specific measures to reduce or avoid pollutant emissions will be applied at the project-level stage based on the results of a site-specific NEPA analysis by the BLM or as conditions of approval in permits issued by the ADEC, Division of Air Quality.

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50.	—	—	Alaska Department of Natural Resources	94102	40	Air Quality	15 Chapter 2, Section 2.2, Page 2-18, Table 2-2 Non-applicability of proposed air quality requirements The information for all the alternatives discussed under Require Operating Procedure 6 "Prevent unnecessary or undue degradation of the lands and protect health" discusses BLM requirements for air quality. This information neglects to mention that ADEC has regulatory authority under the Clean Air Act for air quality permitting. Item "f." in this section states that "If the air quality analysis show potential future exceedances of National Ambient Air Quality Standards (NAAQS) or Alaska Ambient Air Quality Standards (AAAQS) or impacts above certain levels of concerns for AQRVs, the BLM would require air quality mitigation measures and strategies within its authority and in consultation with local, State, federal, and tribal agencies with responsibility for managing air resources, in addition to regulatory requirements and proponent committed emissions reduction measures and for emission sources not otherwise regulated by the ADEC or EPA." It is not clear what is meant by BLM air quality mitigation measures and strategies within its authority. In the specific context of Air Quality Related Values (AQRVs), such as visibility, the impacts over certain levels of concern for AQRVs only exist when an emission source is located within a reasonable distance of federal lands with a Class 1 air quality designation, such as national parks. The closest Class 1 lands are in Denali National Park 526 miles away.	The BLM must ensure that BLM-authorized activities comply with the Clean Air Act and all applicable federal, state, tribal, and local air quality laws and regulations. ROP 6, which was developed in coordination with the State of Alaska, is intended to help the BLM meet its responsibilities under the Clean Air Act as well as under the Federal Land Policy and Management Act, the NEPA, the Wilderness Act, and the National Wildlife Refuge System Administration Act, all of which guide the BLM's management of air resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Tim	Whitehouse	PEER	95601	7	Air Quality	What do we need to know and why regarding Air Quality Monitoring and Analysis? ? Air Quality (AQ) and Air Quality Related Values (AQRV) analyses will be required for oil and gas exploration and development in the 1002 Area of the Arctic National Wildlife Refuge (NWR). ? The legal basis for performing AQ and AQRV analyses for industrial activities that may affect federal lands and for operating in the Arctic NWR come from: ? Clean Air Act (CAA), ? National Environmental Protection Act (NEPA), ? Federal Land Policy Management Act (FLPMA), ? Refuge Improvement Act and the Wilderness Act, ? Alaska National Interest Lands Conservation Act (ANILCA), and ? Arctic NWR Comprehensive Conservation Plan (CCP). ? Guidance and Policy regarding AQ and AQRV analysis can be found in the: ? Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report-Revised (2010), and ? Memorandum of Understanding among the U.S. Department of Agriculture, U.S. Department of the Interior, and U.S. Environmental Protection Agency, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process (June 23, 2011). ? Sensitive resources: The Arctic Refuge 1002 area is at the eastern end of the Arctic Coastal Plain, and therefore has similar resources to the NPR-A e.g., lichens and moss, which are important caribou forage during winter and migration. Lichens and moss are particularly sensitive to air pollution. Additionally, the Arctic Refuge coastal plain has: ? Adjacent designated Wilderness which could be degraded by exploration and	The BLM notes that this comment reproduces the contents of an internal USFWS and BLM data needs memorandum developed at the start of this EIS. The BLM used the information in these data needs memorandums to inform the EIS alternatives development process; however, not all of the issues identified in the data memorandums were applicable to this Leasing EIS process. Data gaps and resource assessments prepared by the USFWS and BLM discuss the entirety of the oil and gas development process in the 1002 Area, from leasing to full build-out. Data needs will continue to be assessed, and data will be collected to inform NEPA analyses required for site-specific development proposals. Appendix Q addresses each of the data gaps and resource assessments addressed by the data needs memorandum The summary of air quality and air quality-related values background information, including the legal basis and sensitive resources, are noted. Appendix D of the Draft EIS described the primary laws and regulations applicable to the leasing action. The BLM identified sensitive resources that could be affected and evaluated impacts on these resources in Chapter 3 of the Draft EIS, in the applicable sections. Potential construction and operational activities of hypothetical development scenarios under each alternative were described in Appendix B and analyzed in Chapter 3 of the Draft EIS. The BLM has updated Appendix B in the Final EIS, and Chapters 2 and 3 have been updated to reflect changes in

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51. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	development activities; ? Prevailing NE winds that place it upwind of other Dept. of Interior land management areas, particularly Gates of the Arctic National Park and Preserve; ? Fish and wildlife resources used for subsistence, including berries, fish, and migratory birds, that may be affected by airborne pollutants; ? Denning and feeding ESA- and Marine Mammal Protection Act (MMPA)-protected polar bears, which have demonstrated contaminant loads and may be susceptible to impacts from additional airborne contaminants. ? Interested stakeholders for oil and gas development in the Arctic Refuge include subsistence users, hunters and fishers, river and trekking guides, and the nation's public, who may conclude that oil and gas development in the Arctic 1002 area would permanently and irreversibly disrupt the ecological integrity. This interest may initiate litigation. ? Based on legislation, the maximum extent of surface development footprint is known. Construction and operation activity related to that footprint can reasonably and should be identified.	the hypothetical development scenarios.
52.	Tim	Whitehouse	PEER	95601	8, 9, 10	Air Quality	AQ and AQRV analyses quantify: ? Criteria Pollutants (for National and Alaska Ambient Air Quality Standards; NAAQS and AAAQS) Carbon Monoxide (CO), Ozone (O3), Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), Particulate Matter (PM10, and PM2.5), Lead; ? Air Quality Related Values (AQRVs) - impact to visibility and Nitrogen & Sulfur deposition; ? Air Toxics (Benzene, Formaldehyde, etc.); ? Greenhouse Gases (GHGs; Carbon Dioxide [CO2], Methane [CH4], etc.); and ? Ultra-fine particulates and Black Carbon (Soot), which are related to changing albedo ("graying" of the Arctic). ? AQ and AQRV analyses are cumulative over the life of a project, so	The BLM notes that this comment reproduces the contents of an internal USFWS and BLM data needs memorandum developed at the start of this EIS. The BLM used the information in these data needs memorandums to inform the EIS alternatives development process; however, not all of the issues identified in the data memorandums were applicable to this Leasing EIS process. Data gaps and resource assessments prepared by the USFWS and BLM discuss the entirety of the oil and gas development process in the 1002 Area, from leasing to full build-out. Data needs will continue to be

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52. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	below we discuss Information Needs for three phases: ? Phase 1: Information needed to develop an Integrated Activity Plan and a lease sale within one year; ? Phase 2: Information needed for subsequent NEPA processes leading to drilling and production; and, ? Phase 3: Information needed to protect resources as further exploration, drilling, and production programs proceed. For all phases, information needed to conduct AQ and AQRV analyses include: ? Detailed project descriptions. ? Analysis of current data sufficiency and evaluation of the need for additional data collection, as adequate ambient background concentration data do not exist. ? Air quality modeling (AQ and AQRV) modeling and result interpretation. ? Incorporation of AQ and AQRV results into the NEPA process. Information Needs (by Phase) Phase 1. Information needed to develop an Integrated Activity Plan (IAP) and a lease sale within one year: ? Key project description elements for seismic exploration or exploratory drilling: ; Aircraft Information (number, type of planes; number of Landing/Takeoffs(LTOs)) ; Camp Facilities (Camp water maker, heaters, etc.) ; Fuel Supply and storage ; Size of operation (e.g., cat train versus drilling rig) ? Adequate data substitutes for background National Ambient Air Quality Standards (NAAQS) and Hazardous Air Pollutant Standards (HAPS) concentrations (no local ambient air quality data exists and could not be collected within one year). Especially true for background NO2 for subsistence hunting, trapping and fishing access. ; Past modeling efforts in Alaska have found that 1-hour NO2 emissions can be significant	assessed, and data will be collected to inform NEPA analyses required for site-specific development proposals. Appendix Q addresses each of the data gaps and resource assessments addressed by the data needs memorandum The summary of air quality and air quality-related values background information, including the legal basis and sensitive resources, are noted. Appendix D of the Draft EIS described the primary laws and regulations applicable to the leasing action. The BLM identified sensitive resources that could be affected and evaluated impacts on these resources in Chapter 3 of the Draft EIS, in the applicable sections. Potential construction and operational activities of hypothetical development scenarios under each alternative were described in Appendix B and analyzed in Chapter 3 of the Draft EIS. The BLM has updated Appendix B in the Final EIS, and Chapters 2 and 3 have been updated to reflect changes in the hypothetical development scenarios.

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52. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	around large drill rigs (e.g. 5 km radius buffer). The 1hour NO2 standard was established by the Environmental Protection Agency (EPA) to protect human health. An example of the process (not the data) is previous work on the Kenai NWR. † There is also a drill rig workgroup for NO2 impacts to the Arctic with respect to permitting (http://dec.alaska.gov/air/ap/docs/North-SlopePOGO-Simulation-Modeling-Report-FINAL-2017-10-17.pdf) ? Modeling, interpretation, and review could take 1 week to 1 month depending upon the geographic area, nearby sensitive resources, and and impact of operations (e.g., seismic surveys would be much less than a large exploratory drilling rig). Estimated resources needed to complete this work is one to four technical specialist FTE's from BLM or FWS, all of whom have national-level workloads, and assuming data are sufficient and project is clearly defined. Phase 2. Information needed for NEPA processes leading to drilling and production: ? Project description sufficient for NEPA purposes. ? Ambient air quality data for modeling to determine background AND assessment and tracking of cumulative impacts. ? Long-term ambient air quality monitoring station data (NAAQS) from Nuiqsut (adjacent to NPR-A) was used for NPR-A draft EIS, but there are no local ambient air quality data available for the Arctic 1002 area. ? Collecting sufficient data to inform the NPR-A draft EIS took two years and utilized considerable BLM/FWS staff, significant contractor assistance, and additional agency (EPA) coordination. † There is an existing BLM contractor working on the Reasonable Foreseeable Development (RFD) for the Alaska	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	North Slope Air Quality study (NSRAQ study). This work is targeted to be complete by Spring 2019. ? An estimated \$150-200K would be required to to add to the current contract to include the Arctic 1002 project, assuming that it could be modified and a clear funding source is identified. ? AQ and AQRV modeling of air quality impacts using: Near Field Modeling (AERMOD) Far-Field Modeling (North Slope Regional Air Quality Modeling - NS RAQM) The worst-case prediction of air quality impacts needed for management decisions can reasonably be modeled. ? Northern Alaska federal lands such as Arctic NWR and Gates of the Arctic (National Park Service) requires quantitative, not qualitative, AQ and AQRV analyses prior to development under NEPA. Phase 3. Information needed to protect resources during drilling and production. ? Sensitive resources specific to lease area ? Specific project development descriptions ? Likely, additional site-specific AQ and AQRV analyses ? Further developments of near-field Modeling (AERMOD) and far-Field Modeling (North Slope Regional Air Quality Modeling - NS RAQM) Recent analyses examples include NPR-A Greater Moose's Tooth (GMT)-1 and GMT-2, and the proposed Willow project. (1002 area project size is similar to Alpine, but that analysis is out-of-date and timeline or costs would not be accurate for the 1002 development.) What information is currently available to address the information needs for subjects? ? Short-term: The process (not data) used for air impact evaluation for oil and gas development on the Kenai NWR could be used to initially analyze	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	NO2 impacts for seismic and exploratory drilling. ? Longer-term: Current projects in NPR-A, including GMT-1 and GMT-2 have existing near- and far-field AQ and AQRV analyses, but these would need to be expanded in scope and include location-specific ambient air quality data. What are key information gaps? ? A clear project description that details the Reasonable Foreseeable Development (RFD). With the RFD estimate, additional high, medium or low projection are created to characterize the future potential development. For each stage (exploration, construction/drilling, production), project descriptions need to include: ? number, size, and highest probability location of wells ? number of pads ? estimates of air emissions ? number and location of roads ? specific and auxiliary equipment used ? supplemental power used (fuel, storage) ? control technologies used ? construction activity and equipment used ? geographic proximity of sensitive resources ? topography ? emission magnitude ? Additions to current near-field and far-field modeling to include the Arctic 1002 area. ? Ambient air quality monitoring in the Arctic 1002 area and downwind (minimum of NAAQS, PM2.5, and Prevention of Significant Deterioration (PSD)) to address cumulative impacts and support accurate modeling.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Tim	Whitehouse	PEER	95601	12	Air Quality	Establish long-term NAAQS ambient monitoring stations in or near Arctic 1002 area and downwind in sensitive areas, including monitoring and study sites.	The ADEC, Air Quality Division; the North Slope Borough; and the BLM and USFWS are evaluating the potential for providing additional monitoring stations on the North Slope. In particular, the BLM is currently developing a contract scope of work to establish a long-term air quality monitoring station in Kaktovik. The station would collect year-round air pollutant data that would be used to support BLM decision-making related to land use planning, and compliance and reasonably foreseeable future land use authorizations.
54.	Harry K.	Brower Jr.	North Slope Borough	95612	24	Air Quality	However, it appears that BLM has not considered the impacts of gas flaring associated with oil and gas exploration and production in its analysis of outdoor air quality. We suggest that BLM include and analyze the potential effects associated with this emissions source.	Evaluating the impacts of flaring is beyond the scope of this programmatic-level EIS, which is to evaluate the impacts of leasing and not site-specific future development activity. This type of analysis would be performed during a site-specific NEPA analysis at the time a development application is submitted.
55.	Harry K.	Brower Jr.	North Slope Borough	95612	25	Air Quality	BLM also should consider the relationship between outdoor air quality and any corresponding impacts on indoor air quality.	The effects on indoor air quality are outside the scope of this programmatic-level EIS.

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56.	Harry K.	Brower Jr.	North Slope Borough	95612	26	Air Quality	addition, baseline air quality data are needed for Kaktovik and the Coastal Plain in order to monitor the effects of development on air quality. These baseline data must be obtained before construction activities begin. We suggest that monitoring stations be constructed in: (1) Kaktovik; (2) in the portion of the Coastal Plain where development might occur; and (3) downwind of possible development.	The suggestion of where to place monitoring stations is noted. The BLM is currently developing a contract scope of work to establish a long-term air quality monitoring station in Kaktovik. The station would collect year-round air pollutant data that would be used to support BLM decision-making related to land use planning, and compliance and reasonably foreseeable future land use authorizations. The data would support air analyses for future oil and gas development on the Coastal Plain by providing baseline air quality information to the BLM, the general public, and the community against which impacts from development can be assessed. This would be done by comparing the data with data or modeling analyses from the sites after development has commenced.
57.	Harry K.	Brower Jr.	North Slope Borough	95612	27	Air Quality	We encourage BLM to require air monitoring for hazardous air pollutants, such as benzene, in addition to the criteria air pollutants, in order to more closely analyze possible effects of emissions on human health.	ROP 6 describes air quality-related protective measures that the BLM would impose on applicants during the permitting process. The type of monitoring required would be determined through an analysis performed at the site-specific level when a development application is submitted; it would depend on a variety of factors, such as the location and scale of the proposal, including the proximity to sensitive receptors.

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58.	Harry K.	Brower Jr.	North Slope Borough	95612	29	Air Quality	We suggest that the federal government increase funding to the Alaska Department of Environmental Conservation to allow this agency to set up monitoring stations in the Coastal Plain as part of the State of Alaska's Ambient Air Monitoring Network Plan.	Funding decisions are outside the scope of this EIS; however, it should be noted that the BLM is currently developing a contract scope of work to establish a long-term air quality monitoring station in Kaktovik. It is anticipated that the BLM and USFWS would provide funding, while ADEC would provide technical expertise in monitoring, data review and interpretation, and community outreach, including potentially displaying real-time data on its air quality data website.
59.	Kevin	Kane	Sierra Club, Western Watersheds	96216	4	Air Quality	You do not have air particulate measurements for the entire area. This must be collected for an entire year as baseline data for future comparisons before there is exploration.	As described in ROP 6(a), "prior to submittal of an application to develop a CPF, production pad/well, airstrip, road, gas compressor station, or other potential air pollutant emission source (hereafter called project), the BLM Authorized Officer may require the project proponent to provide a minimum of 1 year of baseline ambient air monitoring data for any pollutant of concern, as determined by the BLM." These data would be used to support a site-specific NEPA analysis of each proposal.

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60.	Withheld	Withheld	—	68965	54	Air Quality	25. Chapter 3; section 3.2.2, page 3-13, Air Quality. The effects analysis for Alternative A, the no-action alternative, includes the statement, "Local and regional air emission sources, described above under Affected Environment, would continue to contribute air pollutants at levels commensurate with the increase or decrease in these emission sources over time." Does this mean that no trends in air quality are reasonably certain to occur across the time interval when leased areas on the Coastal Plain might be in some phase of the program? In order to make the effects analysis of Alternative A to be useful as a comparative baseline it needs to include meaningful analysis of environmental trends likely to impact the Coastal Plain for the term of the proposed action. If no trends in air quality can be discerned, the factors that contribute to uncertainty should be described. It is meaningless to state that air pollutants in the area may go up or down depending on whether pollutant generating activities go up or down. Please make your analysis of Alternative A as a control as meaningful as possible, for the Air Quality resource, and all other resources analyzed.	The BLM has revised Section 3.2.2, No Action Alternative, to better describe likely trends under Alternative A.

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61.	Withheld	Withheld	—	68965	55	Air Quality	26. Chapter 3; section 3.2.2, page 3-16, Air Quality. Please consider referring to the hypothetical development scenario here and explaining in greater detail why using this scenario to analyze air quality effects does not reveal differences among the action alternatives. Because this is the first effects analysis encountered by readers of the draft EIS, we arrive here with the reasonable expectation that the hypothetical development scenario will be central to all effects analyses. Beginning with an unusual case in which the hypothetical development scenario is not informative requires explanation.	The hypothetical development scenarios and changes in Chapter 2, Alternatives, have been examined. The BLM has described potential differences among alternatives in the Final EIS.
62.	Jill	Nogi	Environmental Protection Agency	71634	18	Air Quality	We recommend adding a "form of standard" column to Table 3-6 Average Air Pollutant Monitoring Values, to describe how each design value was calculated.	The BLM has revised Section 3.2.3 as suggested in the Final EIS.
63.	Allen E.	Smith	—	74324	10	Air Quality	fails to adequately show how air quality will be protected.	The steps that would be taken to assess air quality impacts and determine appropriate mitigations are described in ROP 6, contained on pages 2-17 to 2-19 of the Draft EIS. The BLM has updated ROP 6 in the Final EIS to better delineate the actions, and the order of the actions, that will be required of the BLM and project proponents in assessing the potential for impacts and any required mitigation and monitoring for future project development proposals.

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64.	Withheld	Withheld	—	83698	2	Air Quality	there should have been downstream analyses for air quality (pg. 3-10)	Analysis of air quality impacts from downstream combustion of oil and gas produced on the 1002 Area is outside the scope of this document. The downstream use and location of produced oil and gas are highly speculative and therefore not reasonably measurable. Section 3.2.1, Climate and Meteorology, of the Draft EIS estimated downstream greenhouse gas emissions using the BOEM Greenhouse Gas Lifecycle model (pages 3-7 to 3-9).
65.	—	—	Alaska Department of Natural Resources	94102	56	Air Quality	31 Chapter 3, Page 3-13 Justify analysis - inconsistencies The last sentence in paragraph five on this page notes that "Future development proposals on the Coastal Plain are anticipated to be similar in scope to the GMT2 project described and analyzed in the GMT2 Final SEIS (BLM2018a)." This appears to conflict with the discussion of GHG emissions on page 3-6 of this chapter which notes that the Coastal Plain GHG emissions could represent approximately 9 to 59 times the estimated oil production of the GMT2 development. Please clarify.	The intent of this sentence was that individual development proposals were anticipated to be similar in scope to GMT2 rather than representative of total development on the Coastal Plain, though the BLM recognizes that the GMT2 project was for one satellite pad and not the full suite of emissions sources, such as a central processing facility (CPF). The BLM has deleted the referenced sentence from the Final EIS for direct and indirect impacts, and the limitations on the use of GMT2 in the cumulative analysis has been disclosed.
66.	Withheld	Withheld	—	94547	5	Air Quality	How will air quality be affected?	Section 3.2.2 of the Draft EIS provided an overview of the assumed direct, indirect, and cumulative impacts on air quality from opening the 1002 Area to oil and gas development. See also responses to AIR-1 through AIR-3.

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67.	Steven	Amstrup	Polar Bears International	81368	77	Air Quality	And in addition to exploration, development, and production activities, BLM must also assess potential impacts to air quality and air quality related values from the reclamation phase of the program, e.g., short-term and localized impacts from backfill operations, transport of materials (including loading and unloading), storage, heavy vehicle use, ground-disturbing maintenance activities, etc.	A bullet on reclamation has been added to Section 3.2.2 of the Final EIS.

S.3.3 Alternatives

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Jane	Heisler	—	54194	4	Range of Alternatives	Why does the Draft EIS envision leasing the majority of the Arctic Refuge Coastal Plain to oil and gas corporations, going far beyond what was required in the Tax Act?	Alternative D2 has been modified to offer 800,000 acres for leasing.
2.	Withheld	Withheld	—	55209	1	Range of Alternatives	all the action alternatives in the draft EIS offer much more acreage than required by the Tax Act, which was only 400,000 acres for each sale.	Alternative D2 has been modified to offer 800,000 acres for leasing.
3.	Randy	Oliver	—	56583	1	Range of Alternatives	Required Operating Procedure 35 b. Before final abandonment, land used for oil and gas infrastructure-including well pads, production facilities, access roads, and airstrips-would be restored to ensure eventual restoration of ecosystem function and meet minimal standards to restore general wilderness characteristics. Why only "minimal standards"?	Operators would be required to submit a reclamation plan that satisfies the objective. At the earliest feasible time, the operator shall reclaim the area disturbed, except to the extent necessary, by taking reasonable measures to prevent or control on-site and off-site damage of the federal lands. Text under Alternative D has been edited.
4.	Randy	Oliver	—	56583	2	Range of Alternatives	Required Operating Procedure 40 Objective: Minimize cultural and resource conflicts. I see no provision of enforcement, nor penalties for noncompliance.	As noted under ROP 40, section i, the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.

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5.	Randy	Oliver	—	56583	4	Range of Alternatives	Required Operating Procedure 46 Objective: Minimize impacts on marine mammals from vessel traffic. Can there be a requirement for propeller guards in order to protect marine mammals?	The level of specificity for this would be determined at the project-level authorizations. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
6.	Randy	Oliver	—	56583	6	Range of Alternatives	Water impoundment in a flooded pit would likely remain unfrozen near the bottom, creating a thaw bulb around and beneath the pit, which may cause the excavation walls to slough and deposit material into the pit Should there be a maximum allowable depth specified?	The level of specificity related to pit depth would be determined at the project-level authorizations. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
7.	Randy	Oliver	—	56583	7	Range of Alternatives	Hordeum jubatum is a salt-tolerant species with extreme cold tolerance and is capable of invading a range of Coastal Plain ecosystems, including coastal-influenced plant communities. It thus has some potential to spread along with development in the program area. If this species is not palatable to local birds or mammals, do eradication measures need to be specified?	As noted under ROP 43, future site-specific authorizations would require an invasive species management plan.
8.	Randy	Oliver	—	56583	8	Range of Alternatives	Re birds: BMPs of eliminating guy wires, reducing tower heights, and shielding lighting would reduce the risk of collisions with facilities in the program area. Are these BMPs spelled out and enforced?	ROP 26 addresses exterior lighting. ROP 27, which focuses on minimizing impacts on bird species, addresses guy wires and towers. The enforcement of ROPs is tied to authorizations.

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9.	Joan	Norberg	Yukon Conservation Society	57318	5	Range of Alternatives	Industrial activities during nesting and rearing season will destroy some nests, kill some hatchlings and disturb countless other birds. Therefore, YCS respectfully recommends that no activity be permitted during the nesting and rearing seasons for migratory birds.	All future authorizations would be required to comply with the Migratory Bird Treaty Act and would need to meet objectives of ROPs designed to avoid impacts on ground-nesting birds.
10.	Joan	Norberg	Yukon Conservation Society	57318	6	Range of Alternatives	YCS respectfully recommends that no activity take place in the 1002 lands during caribou calving season and that all traces of infrastructure be removed each year prior to calving season.	Removal of infrastructure each year is unrealistic for oil and gas programs.
11.	Withheld	Withheld	—	58633	1	Range of Alternatives	It does not show the sprawling nature of oil development under the different action alternatives on a map which would allow the public to visualize and comment on the extensive nature of the development. The public has a right to full disclosure of the impacts that would result from each of the alternatives.	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
12.	Carolyn	Monteith	—	58750	2	Range of Alternatives	ROP 34 USE OF AIRCRAFT FOR PERMITTED ACTIVITIES (page 2-31) General comment: The ROP is vague and allows for modification of actions after a resource has been impacted. The draft EIS does not address the damage to the resources from these actions. Specifically, Section a states, in part, "Land users would submit an aircraft use plan as part of an oil and gas exploration or development proposal, which includes a plan to monitor flights and includes a reporting system for subsistence hunters to easily report flights that disturb subsistence harvest. The plan would address strategies to minimize impacts on subsistence hunting and associated activities, including the number of flights, type of aircraft, and flight altitudes and routes, and would also include a plan to monitor flights. Proposed aircraft use plans would be reviewed by the appropriate Alaska Native or subsistence organization.	ROP 34a requires submittal of an aircraft use plan associated with project-specific activities, which would analyze impacts from aircraft. Reviews of these plans by Alaska Native or subsistence organizations could allow for up-front mitigations. The BLM has added additional discussion of potential impacts from aircraft to Section 3.3.4.

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12. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Consultations with these same agencies would be required if unacceptable disturbance is identified by subsistence users. Adjustments, including possible suspension of all flights, may be required by the BLM Authorized Officer, if resulting disturbance is determined to be unacceptable. (emphasis added). This after the fact modification of the use of aircraft acknowledges damage to the resource, and the EIS does not include the impacts of this damage. Section b of the ROP 34 reads "Use of aircraft, especially rotary wing aircraft, would be kept to a minimum near known subsistence camps and cabins or during sensitive subsistence hunting periods (spring goose hunting, summer caribou, and fall moose hunting) and when recreationists are present." The provision "kept to a minimum" allows as many flights as deemed necessary, and these flights will damage the resources. Again, the draft EIS does not include the impacts of these damages. Section d of ROP 34 reads "Minimize the number of helicopter landings in caribou calving ranges from May 20 through June 20." This ROP allows helicopter landings in caribou calving ranges during the critical time period. The damage to the resource is not included in the draft EIS. Section e of ROP 34 reads "Pursuing running wildlife is hazing. Hazing wildlife by aircraft pilots is prohibited, unless otherwise authorized. If wildlife begins to run as an aircraft approaches, the aircraft is too close, and the operator must break away." This ROP acknowledges that aircraft will likely fly too close to wildlife, and only after the wildlife have been disturbed will the aircraft operator be required to "break away". The damage to the resource is not adequately addressed in the draft EIS.	(see above)

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13.	Julie	Mages	—	62224	1	Range of Alternatives	On page 2-6 under Lease Stipulation 3, the document states “ Because the subsurface flow paths to perennial springs are unknown and could be disturbed by drilling or fracking, use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted.” How will this be accomplished? The requirement is for the lessee to conduct studies... how long does a study like this need to be run to ensure that they are not disrupting flow? What is the definition of a “buffer area?” This requirement/standard is vague and if not clearly defined could negatively impact springs that are so important to the wildlife refuge.	Buffer areas are identified spatially on Maps 2-2, 2-4, and 2-6 in the Draft EIS. Specific parameters and studies for oil and gas projects would be determined when those authorizations are granted.
14.	Julie	Mages	—	62647	1	Range of Alternatives	Seven times in the document the term “Major Construction” is utilized. This term is extremely important as it limits activities in order to preserve natural animal movements, etc. However, there is nowhere in the document that the definition is clearly defined. Will this be addressed on a case-by-case basis? Recommend adding clarifying language.	Clarifications have been made in the text of Chapters 2 and 3.
15.	Martha	Raynolds	—	67039	11	Range of Alternatives	Lease Stipulation 6 says they will, “manage to ensure unhindered movement of caribou through the area, especially the S-SE portion (calving grounds).” This is not possible under Alternatives A, B or C. The Terrestrial Mammal section says “Using these schematic footprints and extrapolating to a 2,000-acre maximum gravel footprint, it estimated the total acres of potential disturbance and displacement is 633,000 acres (45% of area).”	Text of the note associated with Lease Stipulation 6 has been edited for clarity.

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16.	Martha	Raynolds	—	67039	16	Range of Alternatives	Lease Stipulation 8's purpose is poorly written: "Objective: To protect key surface resources and subsistence resources/activities resulting from permanent oil and gas development and associated activities in areas used by caribou during post-calving and insect-relief periods." This should be more clearly written.	Text has been edited for clarity.
17.	Martha	Raynolds	—	67039	17	Range of Alternatives	Required Operating Procedure 8 & 9 will require current fish studies, as the information does not exist to meet the Objective, "Maintain natural hydrologic regimes and populations of, and adequate habitat for, fish, and aquatic invertebrates." These studies will have to be completed before the EIS can adequately summarize the impacts or specify appropriate Required Operating Procedures. Who will pay for this? The responsibility for funding these studies should be clearly stated.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
18.	Martha	Raynolds	—	67039	18	Range of Alternatives	Required Operating Procedure 10: To meet the objective for this ROP, all grizzly and polar bear dens would need to be identified. This is not possible. Some of the methods, such as collaring bears, could cause more disturbance and mortality than the oil & gas impacts they are trying to avoid. Also, who is going to pay for this effort? The responsibility for funding these studies should be clearly stated.	The requirements listed support the objective of the ROP. Locating polar bear dens is part of authorizations received from the USFWS; the State of Alaska does not have a requirement to locate grizzly bear dens. Any required studies prior to on-the-ground activities would be the responsibility of the operator or the authorizing agency. Established techniques used by the USFWS to identify dens, such as collaring, den detection surveys, aerial and handheld forward looking infrared (FLIR), and scent-trained dogs, would be utilized. It is acknowledged that capturing bears does harass the animals; however, the USFWS will utilize all management tools at its disposal to locate dens.

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19.	Martha	Raynolds	—	67039	19	Range of Alternatives	Required Operating Procedure 35: This objective is not realistic or possible, "Ensure ongoing and long-term reclamation of land to its previous condition and use." In fact, later in the document (p3-57), that is recognized, it says, "Reclamation has not been proven for gravel removal in the arctic environment once operations have ceased." There is no clear statement of bonding requirements.	The BLM believes that the objective is appropriate. Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).
20.	Joelle	Buffa	—	67158	2	Range of Alternatives	Alternatives B, C, and D contain no stipulations or mitigating measures to protect nesting shorebirds. Lease Stipulation 4 (Page 2-7), whose purpose is to "Protect fish and wildlife habitat, including that for waterfowl and shorebirds, ... " only restricts oil/gas development in a miniscule subset of shorebird habitat along the coast. And even in this small portion of the vast (unprotected) shorebird habitat, only oil drill pads are restricted- but infrastructure that supports the drill pads could be permitted. The vast majority of shorebird nesting, resting and migration habitat would be available for oil and gas leasing and untold habitat destruction without protection or mitigating measures.	Lease Stipulation 9 requires an impact and conflict avoidance and monitoring plan, which would address the protection of waterfowl and shorebirds and prevent loss or alteration of important bird habitat. Additional site-specific analyses would be completed for project-level authorizations.
21.	Withheld	Withheld	—	69490	1	Range of Alternatives	put a moratorium on this development until the price of an oil barrel rises to a new high, above \$145 (reached in 2008). That is not a stringent test, if we do not take into account inflation since 2008. Presently, the price is about \$45.	The BLM is required to implement an oil and gas leasing program on the Coastal Plain per PL 115-97, regardless of oil prices.

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22.	Brett	Mayer	American Canoe Association	69778	2	Range of Alternatives	The Hulahula River is within the proposed leasing zone, and there is nothing in the EIS or leasing stipulations that requires recreational access to rivers or anywhere within the leasing area.	Recreational access would be maintained. Lease Stipulation 4 includes minimizing impacts on recreation. Under Alternative D, Lease Stipulation 1 identifies NSO around the Hulahula River; right-of-way (ROW) authorizations would require additional analysis for resources (including recreation access) before the authorization was granted.
23.	Withheld	Withheld	—	70934	4	Range of Alternatives	BLM should explain why Kimikpowruk (Pokok Bay) which often has lots of Dollies at its mouth in the summer has not been included as an area with setbacks?	Lease Stipulation 4 includes Pokok Bay within the identified NSO area under Alternative B; protections for this area would be more restrictive under other action alternatives.
24.	Withheld	Withheld	—	70934	5	Range of Alternatives	Stipulation 3 Section e- There are significant Aufeis fields on the Aichilik River. This resource should be given consideration in Alternative D. Justification for omitting this should be given.	Lease Stipulation 1 provides additional protections for the Aichilik River, including the aufeis fields.
25.	Withheld	Withheld	—	70934	6	Range of Alternatives	Stipulation 4 - Public access and navigation should be preserved. It would be good to add a provision allowing all travelers, whether Native or non-native, to continue to be able to travel along the coast without fear of arrest. I know several people who have tried to paddle the central Beaufort Coast who have been detained by private security in the oil fields.	Public access points could be maintained; however, if an area is leased, there are rights that go along with the lease that could restrict travel. An NSO in coastal and lagoon areas would maintain public access (even on stream setbacks) as long as all applicable permits are in place.
26.	Withheld	Withheld	—	70934	7	Range of Alternatives	Stipulation 5- a. It is concerning that this list of areas is incomplete and that there is an avenue for exemptions and administrative action to circumvent important environmental regulation. Angun Creek, the Lower Canning, Brownlow Pt Area, Jago Bitty and other suitable habitat should be included. Justification for their omission should be provided and justified.	An area excluded from the list under Lease Stipulation 5 does not mean that it would be omitted from compliance with existing federal and state laws and regulations that must be adhered to. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2)

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26. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., Alaska Department of Fish and Game [ADFG], North Slope Borough (NSB), and local governments) should be undertaken, as appropriate, and documented. The BLM also will consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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27.	Withheld	Withheld	—	70934	8	Range of Alternatives	Stipulation 6 - July 20 is a reasonable date for the end of insect season with the current climate and phenology. What metric would be used to monitor the suitability of this date as climate changes and the need for insect avoidance changes? Further there is mention of "Heavy Equipment" page 2-11, BLM should define this term. And should show data that indicates a threshold for disturbance related to the size of vehicles? Does this limit heavy truck traffic?	Heavy equipment has been defined in the glossary. Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
28.	Withheld	Withheld	—	70934	9	Range of Alternatives	Stipulation 6 for alternative B and C uses the term "ensure unhindered movement", Given the data furnished by ADF&G reports on the reactions of WAH animals to the Red-dog road, How can you ensure "unhindered" movement while building roads and pipelines? Data suggest that a significant portion of that herd alters behavior when encountering roads and traffic.	The BLM has edited text of the note associated with Lease Stipulation 6 for clarity.
29.	Withheld	Withheld	—	70934	10	Range of Alternatives	Stipulations 6-8, Generally speaking the bulk of the caribou related stipulations seem absurd, impractical, impossible to enforce, maddening to adhere to for people working in the fields and with dubious benefit to the caribou. While the general idea of reducing disturbance during critical times of year is good there needs to be more emphasis on creating substantial spatial buffers around areas that caribou use. Data for identifying calving areas should extend beyond the usual dataset and also include the fossil antler record as established by Wald et al. This is a more accurate and robust sample of which areas are important to the PCH and CAH.	If calving is not occurring in the Coastal Plain in a given year, then the operator may apply for a waiver, exception, or modifications. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected

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29. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
30.	Withheld	Withheld	—	70934	11	Range of Alternatives	Operating procedure #12. There should be a requirement to remove Ice Bridges rather than giving options to slot, or breach.	This is standard industry practice on the North Slope. Site-specific conditions may warrant one approach over another during future analyses associated with project-level authorizations.
31.	Withheld	Withheld	—	70934	12	Range of Alternatives	Operating procedur #23-g. Does not address access for hunters into oil fields. What is the plan for development and hunting to coexists? Can hunters use roadways for snowmachine or ATV travel? How close to a pad is the public permitted? Buffer around roads and pipelines for shooting? Different rules for Kaktovik residents and other Alaskans? There is conflicting information in this document and no clear answers anywhere.	Roads that support oil and gas activities are not open to the public, with the exception of subsistence users and local residents. The BLM is required to provide access to subsistence users, and to require operators to consult with local communities and prohibit workers from recreational hunting activities.

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32.	Withheld	Withheld	—	70934	13	Range of Alternatives	Procedure #34 a. Section B, There is no Moose Hunt in 26C.	Text has been edited for clarity.
33.	Withheld	Withheld	—	70934	13	Range of Alternatives	Section C, Given the frequently foggy conditions in the area it would be appropriate to mandate IFR capabilities and other aircraft navigation technology to ensure that aircraft can operate above minimum altitude for the majority of flights. BLM should also consult with a legal team to determine if it has the regulatory authority to regulate aircraft operations. c. Section D, "minimize" is insufficient. The number of flights needs to be quantified, and residents should be informed of limit.	The Federal Aviation Administration (FAA) has jurisdiction to determine which flight rules would apply for all flights. The BLM does not have regulatory authority to dictate flight rules. At the lease sale stage, there is inadequate information to establish quantitative flight limits.
34.	Withheld	Withheld	—	70934	14	Range of Alternatives	Procedure #43, Vehicle cleaning should be mandatory. The spread of invasive plants from the haul-road is inevitable without a strict and concerted effort. BLM should develop the protocol and enforce it.	The plan submitted by the operator under this ROP would detail the process for vehicle cleaning.
35.	Withheld	Withheld	—	70934	15	Range of Alternatives	Procedure #46- Ledyard Bay, The inclusion of this section makes one wonder if BLM is sufficiently familiar with the geography of the area to responsibly be tasked with administering the leases. Ledyard Bay is several hundred miles west of the Arctic Refuge and the reason for including this section is not clear. Perhaps this section was cut and paste from another EIS??	Ledyard Bay was part of the analysis of the marine transit route identified in the hypothetical development scenario. Text of ROP 46 has been edited for clarity.
36.	Withheld	Withheld	—	70934	31	Range of Alternatives	Page 3- 92, States that glacial river deltas may grow. This is patently false. Declines in glacial mass in the Brooks Range indicate that glaciers will provide less water and sediment to the Hulahula, Jago and Okpilak Rivers in the near future. Changes in hydrology and depositional environments will cause these important deltas to shrink rather than grow, further limiting an already scarce and valuable habitat. NSO or other measures should be taken to protect habitat in these river deltas along with the Canning River Delta.	Text has been edited.

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37.	Withheld	Withheld	—	70934	37	Range of Alternatives	Page 3 - 173 in regards to public access and ROP 38, Would roads in the project area be open to the public? If so has this been widely publicized on the North-slope? How will safety and security concerns be handled in the future? Without a determination on these issues it is very hard to predict the effects of development. Based on statements in the Recreation Section where BLM predicts that recreation will increase because of road access it would appear that there is an assumption that public access will be granted.	Roads that support oil and gas activities are not open to the public, with the exception of subsistence users and local residents. The BLM is required to provide access to subsistence users, and to require operators to consult with local communities (through development of a subsistence access plan) and prohibit workers from recreational hunting activities.
38.	Withheld	Withheld	On behalf of 312 scientists	71076	4	Range of Alternatives	The DEIS is seriously flawed in that it does not describe and commit to a transparent, publically-accessible, intensive, comprehensive monitoring plan that will both precede and extend beyond the life of any oil and gas activity on the Coastal Plain.	Monitoring plans will be tailored to the specific location of development and resources or activity being monitored; it is not practicable to develop a template that would cover all resources, activities, and requirements for this EIS.
39.	Heather	Mirczak	—	71628	1	Range of Alternatives	The first of my concerns are in the parcel size and expansive nature of the proposed leases. It is my understanding that the required acreage is 400,000 for each sale, but the proposals offer much greater acreage. I am opposed to this and would like to know why.	Alternative D2 has been modified to offer 800,000 acres for leasing.

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40.	Jill	Nogi	Environmental Protection Agency	71634	5	Range of Alternatives	We are also concerned that the range of alternatives does not include leasing programs with a surface area impact of fewer than 2,000 acres. The authorizing legislation for this action, the Tax Cuts and Jobs Act of 2017, requires the Secretary of the Interior to “authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities.” Section 20001 of Public Law No. 115-97 (Dec. 22, 2017) (emphasis added). We therefore believe that a range of alternatives that includes leasing programs with fewer impacted acres is appropriate and would allow for the meaningful comparative analysis called for by the Council on Environmental Quality regulations implementing NEPA.	The BLM has revised Section 1.9.1 to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

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41.	Jill	Nogi	Environmental Protection Agency	71634	6	Range of Alternatives	We are concerned that the each of the alternatives assumes that surface disturbance impacts would total the 2,000-acre cap imposed by the Tax Act. This is driven in turn by the purpose and need statement, in which the BLM defined the purpose and need such that all alternatives must include 2,000 acres of surface disturbance. The language of the Tax Act, however, would appear to support both a broader purpose and need statement and a broader range of alternatives, stating that "the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities."¹ In addition, assuming the Tax Act mandates a 2,000-acre leasing program, a potential conflict with federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. Rather, alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable.² We therefore believe that the EIS should analyze a broader range of surface disturbances, up to and including 2,000 acres. This would allow for a meaningful comparative analysis of impacts and better educate both the decision maker and the public, as contemplated by the CEQ NEPA regulations.³	The BLM has revised Section 1.9.1 to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix. Given that Congress explicitly established this protective facility acreage limit, any interpretation by the BLM to reduce the limit for a given alternative would be inconsistent with the Tax Act.

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42.	Jill	Nogi	Environmental Protection Agency	71634	7	Range of Alternatives	We also recommend that the BLM consider expanding the way in which alternatives respond to the purpose and need. For example, the alternative analysis could evaluate and disclose ways in which a volume of oil comparable to that anticipated in the reasonably foreseeable development baseline could be extracted with reduced surface impact. By doing so, a more meaningful analysis of a full range of alternatives, including mitigating measures to reduce impacts, may be possible, in accordance with NEPA.	This level of specificity would be determined during the project-level authorization. Site-specific analyses, including those associated with infrastructure and different technologies in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
43.	Jill	Nogi	Environmental Protection Agency	71634	39	Range of Alternatives	Mitigation Chapter 2 of the DEIS lists Stipulations and Required Operating Procedures proposed to be applied to future activities in the program area under each alternative to protect sensitive resources. Where the analysis of environmental consequences in Chapter 3 identifies potential adverse impacts, we recommend that the EIS discuss the extent to which the proposed Stipulations and Required Operating Procedures will mitigate those impacts. If additional mitigation may need to be applied at the project stage to reduce impacts, we recommend that the EIS discuss available mitigation measures, including identifying any mitigation that will be required through future permitting mechanisms.	The alternatives were developed through identification of mitigation measures for protection of the numerous resources within the Coastal Plain. The mitigation measures, which are comprised of proposed lease stipulations and ROPs, vary by each action alternative. This is to provide differing levels of protection for the numerous resources, while complying with all purposes of the Refuge.

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44.	Katherine	Trisolini	Loyola Law School	74278	1	Range of Alternatives	As the DEIS explains, the no action alternative was included for comparison purposes only because it would not meet Congress' mandate to develop a leasing program, leaving on alternatives B, C, and D as possible options. Yet among these three the agency does not include an option that reduces impacts by offering the minimum area of this pristine land for lease consistent with PL 115-97, a particularly important approach in this case because the no action alternative cannot be selected. Alternatives B and C both offer the entire project area for leasing, a total of 1,563,500 acres, vastly exceeding the minimum land area that Congress directed the agency to include. While Alternative D reduces the total area offered, it still significantly exceeds the minimum acreage required by Congress, offering 1,037,200 acres for lease. At most, Congress required the agency to open 800,000 acres. Given that the leasing program is designed to operate in two phases, areas not leased in the first offering could be included in the 400,000 minimum for the second stage, thus making the mandated area even smaller.	Alternative D2 has been modified to offer 800,000 acres for leasing.
45.	Katherine	Trisolini	Loyola Law School	74278	2	Range of Alternatives	Instead of considering an alternative that minimizes total surface area disturbance, the EIS includes only alternatives that include the maximum area permitted by Congress to be disturbed. [DEIS 3-26 ("All the action alternatives assume a surface disturbance area of approximately 2,000 acres from future oil and gas exploration, development and production, not including the gravel pits.")]	The BLM has revised Section 1.9.1 to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

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46.	Katherine	Trisolini	Loyola Law School	74278	4	Range of Alternatives	The unsupported assumption that the Act authorized gravel mining in ANWR significantly expands impacts beyond those that would be anticipated with 2000 acres of surface disturbance authorized by Congress. Moreover, the agency does not offer any alternatives that without the additional surface disturbance from gravel mining. (DEIS 3-26 ["All the action alternatives would include potential development of a gravel mine or mines, . . . The surface of the gravel mines would total approximately 300 acres for each action alternative (not included in the 2,000-acre limit on surface disturbance).])	The BLM has revised Section 1.9.1 to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix..
47.	Katherine	Trisolini	Loyola Law School	74278	6	Range of Alternatives	Even if the Act could be interpreted somehow to permit alternatives that include 300 acres of surface disturbance from gravel mining beyond Congress' 2000 acre limit, the Bureau has a duty under NEPA to consider an alternative that does not add additional acres of gravel mining operations within the project area. The Bureau should include an alternative that either includes the mining within the area of surface area maximum or better yet, one that does not include gravel mining within the project area at all.	The BLM has revised Section 1.9.1 to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

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48.	Richard	Edwards	—	74281	9	Range of Alternatives	The Draft EIS is defective in that it fails to consider the "No Action" alternative as implementable. NEPA requires full consideration of a reasonable range of alternatives, most importantly including no action.	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ CEQ's Forty Most Asked Questions Concerning CEQ's NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge.

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49.	Richard	Edwards	—	74281	10	Range of Alternatives	NEPA requires consideration of alternatives “that are practical or feasible” and not solely “whether the proponent or applicant likes or is itself capable of carrying out a particular alternative”; in fact, 11[a]n alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable.” Because there is no development alternative that can protect the Coastal Plain, the Draft EIS must be revised to address the no-action alternative as a potentially implementable action.	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ’s Forty Most Asked Questions Concerning CEQ’s NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Richard	Edwards	—	74281	11	Range of Alternatives	The BLM's justification for eliminating a least acreage alternative is entirely arbitrary and capricious, as follows: a) The BLM purports to follow the text of Section 20001(c)(3) and where there is no text (rapid "reclamation", etc.), create interpretations that maximize flexibility. Section 20001 is quite clear in its requirement to offer only lands with high hydrocarbon potential---no creative interpretation required. Section 20001(c)(3) can certainly be read to conclude that Congress did not intend for low and medium potential areas to be offered for lease. In a rational world, the disconnect between minimum lease acreage and the reality of on-site conditions would have been reconciled----instead of being ignored in this hastily assembled, industry drafted legislation. b) The argument that leasing alternative acreage does not matter since "actual potential development area would be much less with the 2,000-acre limitation on surface disturbance" is invalid. Once again, this argument leads the uninformed reader toward the false assumption that only 2,000 acres will be disturbed. By the Draft EIS's own admission, Irretrievable and irreversible resource impacts from site disturbance will occur and only increase in scope and extent as lease acreage increases. The complete folly behind this "2,000-acre facility limit" has been addressed above in this letter. c) Perhaps most significantly, BLM's argument that Alternatives D1 and D2 (1,037,000 acres) are "close enough" is completely ludicrous. This defective conclusion essentially equates over two-hundred thousand acres of fragile Coastal Plain to rounding error. The formative legislative intent behind the creation of this Refuge and BLM's mission are entirely violated by such an argument.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Richard	Edwards	—	74281	13	Range of Alternatives	In this defective Draft EIS, BLM fails to even analyze the lower boundary of the Responsible Official's action alternative decision space. What is the action alternative with the lowest potential to adversely impact the smallest acreage over both the short and long-term?	Alternative D2 has been revised to offer 800,000 acres of land for leasing. Every action alternative analyzes up to 2,000 acres of development.
52.	Lisa	Baraff	Northern Alaska Environmental Center	74306	4	Range of Alternatives	Given that P.L. 115-97 Sec. 20001 allows for the first lease sale within 4 years and a subsequent lease within 7 years of the Act, BLM should consider this EIS for only the first lease sale and conduct a subsequent EIS for the second sale, reevaluated based on acreage that leased in the first sale.	Similar to the methods used for the NPR-A IAP EIS, this EIS analyzes multiple lease sales. Such an alternative would have impacts similar to alternatives already analyzed. The BLM would expect little to no difference in impacts under such an alternative. This is because lands that were offered but not leased in the first sale are unlikely to be leased in a second sale a few years later given that exploration is unlikely to substantially advance during that time period.
53.	Allen E.	Smith	—	74324	3	Range of Alternatives	First, the DEIS fails to provide an adequate range of reasonable alternatives. All three alternatives offered allow full oil and gas development and do not meet the lease sale and development limits to occupy only 2,000 acres set by Congress in PL 115-97 by including only well sites and excluding all other collateral infrastructure requirements for leasing.	Alternative D2 has been revised to offer 800,000 acres of land for leasing. Every action alternative analyzes up to 2,000 acres of development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Renae	Smith	Counsel for Environmental Protection	74336	4	Range of Alternatives	BLM ostensibly explains its refusal to consider the minimum lease acreage alternative, as specified by Congress, simply by noting that there are only approximately 427,900 acres of high hydrocarbon potential (HCP), and thus, "low and medium HCP areas must be made available, in addition to the high HCP areas, for the two lease sales to meet the 800,000-acre minimum under PL 115-97." ⁵⁵ Inexplicably, BLM fails to explain why this requires development of more than the minimum acreage directed by Congress. Indeed, lack of sufficient high HCP acreage to meet the Congressional minimum cuts against more expansive development, and instead supports focused development of the minimum required acreage with the highest potential. Thus, BLM utterly fails to provide a reasonable explanation to justify its elimination of the minimum acreage alternative in violation of NEPA. ⁵⁶	Alternative D2 has been modified to offer 800,000 acres for leasing.
55.	Renae	Smith	Counsel for Environmental Protection	74336	5	Range of Alternatives	and low potential. In this way, elimination of the minimum acreage alternative improperly narrows the range of considered alternatives by failing to consider the minimum acreage allowed by Congress. BLM should consider this reasonable alternative in detail. BLM's explanation that alternatives D1 and D2 are "similar in concept" to the minimum alternative is also unreasonable when each of those alternatives would lease approximately 237,000 acres more than the minimum acreage alternative-an increase of more than 25 percent. BLM's elimination of the minimum acreage alternative thus resulted in detailed analysis only of alternatives with greatly expanded acreage, which necessarily include greater areas of medium	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Renae	Smith	Counsel for Environmental Protection	74336	21	Range of Alternatives	In addition to analyzing the program's revenue generation potential, BLM should develop and consider an alternative that delays any lease sales until additional economic data make much more certain that leases sales will maximize revenue generation and oil prices will result in production and royalty payments. Offering lease sales when oil prices are well below the estimated \$78 to \$90 per barrel breakeven oil price could completely undermine the Leasing Program's revenue generation potential by suppressing lease sales price and diminishing the acreage successfully leased. 120 A delayed leasing alternative would also allow BLM to obtain the information necessary to take NEPA's required hard look at the environmental impacts of its proposed Leasing Program. Just yesterday, PEER, an environmental organization, released several "Resource Assessments" in which U.S. Fish and Wildlife Service staff and technical experts from a number of other federal agencies, including BLM, identified "research gaps" in the data necessary to inform the EIS process. 121 These data gaps appear to include important baseline information for water resources, migratory bird populations, polar bears, and caribou. 122 Without this information, BLM cannot comply with NEPA's requirement to make an informed decision. 123 As a result, BLM must seriously consider an alternative that delays leasing until BLM obtains the information necessary to take a hard look at the environmental consequences of its decision. At a minimum, BLM should delay lease sales until the latest time directed by the Tax Cuts and Jobs Act. 124	The BLM is required to implement an oil and gas leasing program on the Coastal Plain per PL 115-97, regardless of oil prices. Data gaps and resource assessments prepared by the USFWS are specific to the entirety of an oil and gas leasing program (beyond the leasing phase that this EIS is focused on). It is highly likely that more data collection would be required prior to completion of NEPA analyses for site-specific activities.

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57.	Eric	Walsh	Government of Canada	74346	35	Range of Alternatives	Chapter 2 - Alternatives Outlines 3 alternatives (not including the no development alternative); however, all alternatives are in excess of 800,000 acres and maximize the 2000-acre surface disturbance rule. Could have been a wider range of alternatives presented and an 800,000 acre alternative.	Alternative D2 has been modified to offer 800,000 acres for leasing.
58.	Withheld	Withheld	—	75257	1	Range of Alternatives	The range of alternatives is inadequate. Limiting the scope of evaluation to developing between 66% and 100% of the coastal plain completely ignores the possibility that the 2000 acres of surface development could be concentrated in a small area, meet the letter of PL 115-97, and limit the impact to 0.125% of the Arctic Plain. Other alternatives need to be developed to move the range in this direction.	Alternative D2 has been modified to offer 800,000 acres for leasing.
59.	Withheld	Withheld	ikpeagvik Iñupiat Corporation	75577	2	Range of Alternatives	most Alternatives put forth in the actual draft document do not appear to be designed to lead to robust lease sales. We also do not believe they are compatible with the Tax Act since they will not lead to a "competitive oil and gas program for the leasing, development, and transportation of oil and gas in and from the Coastal Plain." The included Alternatives in fact appear likely to make it prohibitive to ultimately develop on a lease.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	DJ	Schubert	Animal Welfare Institute	75588	3	Range of Alternatives	There are other reasonable alternatives that BLM failed to consider that would serve the BLM's stated purpose and need for the oil and gas leasing program. PL 115-97 requires that at least two lease sales be held by December 22, 2024, and that each sale offer for lease at least 400,000 acres of the highest high carbon potential ("HCP") lands within the Coastal Plain. ¹ This total of 800,000 acres constitutes approximately 51 percent of the Coastal Plain's total acreage of approximately 1,563,500 acres. Yet the alternatives analyzed in the DEIS would open a substantially higher amount of acreage for lease. The minimum acreage proposed to be offered for lease is 1,037,200 acres under Alternatives D1 and D2, or 66 percent of the Coastal Plain, while the maximum acreage proposed to be offered under Alternatives B and C is 1,563,500 acres, or 100 percent of the Coastal Plain.	Alternative D2 has been modified to offer 800,000 acres for leasing.
61.	DJ	Schubert	Animal Welfare Institute	75588	4	Range of Alternatives	BLM's summary rejection of alternatives that would lease between 800,000 acres to approximately 1,000,000 acres is arbitrary and capricious.	Alternative D2 has been modified to offer 800,000 acres for leasing.
62.	DJ	Schubert	Animal Welfare Institute	75588	8	Range of Alternatives	In light of this, BLM is legally required to adequately consider alternatives that would offer a lower amount of acreage for lease	Alternative D2 has been modified to offer 800,000 acres for leasing.
63.	Andrew	Ogden	—	75704	3	Range of Alternatives	it is noteworthy that all the action Alternatives offer much more acreage than the 400,000 acres required by the Tax Act for each lease sale. The excessive lease offerings provided in the action Alternatives clearly exceed the more modest phased approach Congress intended in the Tax Act.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Lin	Davis	—	75891	7	Range of Alternatives	The DEIS does not discuss ways of minimizing the area to be leased, developed and drilled. Careful readers of the EIS have noted that the list of four DEIS alternative all grab more acres for development than are required by the Tax Act regarding lease sales. Only 400,000 acres are required by the Tax Act but Alternative D grabs 1 million acres or 66% of the Coastal Plain. This confuses the public.	Alternative D2 has been modified to offer 800,000 acres for leasing.
65.	Chandra	Turner	Inuvialuit Game Council	75904	38	Range of Alternatives	Proceeding with the project vs. not proceeding at all is not an option considered by the DEIS. This appears to be because BLM considers the Tax Cuts and Jobs Act of 2017, Public Law 115-97 (PL 115-97) to be binding, thus disqualifying the 'no action' alternative (Alternative A). Alternatives B through D2 do not consider delaying the program but they do consider timing, scale and components of the proposed activities.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.
66.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	6	Range of Alternatives	Alternatives C, D1, and D2 do not meet the DEIS's Purpose and Need. The DEIS sets forth four development alternatives, all of which would impose significant limitations and conditions on future development and BLM decision-making. The DEIS asserts that all four of these alternatives would meet the Purpose and Need-i.e., to "establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain."57 In fact, however, Alternatives C, 54 DEIS at 1-5. 55 43 C.F.R. § 46.120(c) (providing for use of existing environmental analysis for subsequent action upon determination that it adequately assesses the environmental effects of the proposed action and reasonable alternatives); see U.S. Dep't of Interior, BLM, National Environmental Policy	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Act Handbook, H-1790-1, § 5.1 (Jan. 30, 2008) (instructing officials to review existing environmental documents and answer several questions geared at determining whether a prior document adequately analyzes a proposed action). 56 See DEIS at 1-5. 57 Id. at 2-1. Ms. Nicole Hayes March 13, 2019 Page 18 of 36 18 99959215.12 0078439-00052 D1, and D2 would drastically restrict future development options and constrain BLM's future decision-making authority, effectively precluding establishment of a reasonable, competitive oil and gas program in the Coastal Plain. Alternative C would allow surface occupancy on just 40% of the area offered for leasing. Alternatives D1 and D2 would remove 33% of the Coastal Plain from the leasing program entirely and then allow surface occupancy on only 32% of the remaining lands. By comparison, while BLM removed large areas from the NPR-A leasing area for mitigation purposes, the preferred alternative still made 11.8 million contiguous acres available to surface occupancy leasing-over 18 times the number of surface acres that would be available to leasing under Alternative C and 36 times the number of surface acres that would be available under Alternative D.58 Moreover, the interplay of the linear North-South trending river, stream, and delta setbacks with the areal nature of lagoon setbacks and broad NSO restrictions effectively fragments the remaining accessible surface areas, compounding the impracticability of surface occupancy restrictions.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	8	Range of Alternatives	under Alternatives C, D1, and D2, developable areas would be so small, isolated, and removed that they would not support integrated development and would limit potential sharing of infrastructure such as roads, barge landings, or seawater treatment plants. These critical limitations would not allow the investments in surveys and infrastructure required to develop the Coastal Plain as contemplated by Congress.⁶⁰ By isolating large areas and the hydrocarbon resources they may contain, the NSO stipulations and setbacks imposed under Alternatives C, D1, and D2 would effectively prevent optimal development of the 1002 Area as contemplated by Congress, and, therefore, would not meet the Purpose and Need or the requirements of the Tax 58 See U.S. Dep't of Interior, National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement, at 22 (Nov. 2012), https://eplanning.blm.gov/epl-frontoffice/projects/nepa/5251/41003/43153/Vol1_NPR-A_Final_IAP_FEIS.pdf. 59 What is technically feasible and safe will depend on many variables, including well pressure, reservoir depth, sub-surface geology, and overall complexity of the wells, which can be determined only through exploration drilling and testing. 60Alternative B also contains some surface occupancy restrictions which, as discussed above, are inconsistent with congressional intent. However, it allows BLM to consider, evaluate, impose, or exempt from imposition most site-specific conditions based on details available at future phases of the leasing process. Ms. Nicole Hayes March 13, 2019 Page 19 of 36 19 99959215.12 0078439-00052 Act.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7. The vast majority of NSO and setback areas are accessible based on current horizontal directional drilling technologies, which are anticipated to continue to advance over the life of this EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Alternatives that do not meet a proposal's Purpose and Need are not reasonable, and should not be analyzed in the FEIS.61	(see above)
68.	Deana	Lemke	Porcupine Caribou Management Board	80214	16	Range of Alternatives	The draft EIS does not describe the expected implementation or effectiveness of mitigations. The mitigation measures in the draft EIS are deficient as they fail to provide adequate evidence that they will reduce or eliminate the impacts of the proposed development on the PCH. The draft EIS also fails to specify how impacts of development on the PCH will be measured and monitored over time. Metrics for effectiveness must be established to determine the efficacy of mitigation measures as well as to establish the need to adapt the project design and implementation based on evidence. A monitoring program described and approved by the Porcupine Caribou Technical Committee (PCTC) and overseen by an independent body should be required. The program should be expected to assess pre-development conditions and determine post-development impacts and the effectiveness of mitigations. The deficiency of scientifically proven mitigations for the Central Arctic caribou herd and a lack of confidence in their efficacy is a prime example of inadequate pre- and post-development assessment and monitoring (Russell & Gunn 2019).	Discussion of Russell and Gunn (2019) was added to Section 3.3.5. Effectiveness will be monitored to the extent practicable (or as required by the Record of Decision [ROD]) and can be adjusted if necessary. Herd monitoring will continue. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Deana	Lemke	Porcupine Caribou Management Board	80214	18	Range of Alternatives	While the leasing program is required by the Tax Cuts and Jobs Act of 2017 (Public Law 115-97), the PCMB notes that there is no need to lease the entire program area to comply with the law. PL 115-97 requires two lease sales with each sale offering for lease at least 400,000 acres of the highest hydrocarbon potential lands (ES-1). Alternatives B and C offer 1,563,500 acres for lease. Alternatives D1 and D2 offer -1,037,200 acres for lease (ES-3). The PCMB supports the highest level of protection possible in the 1002 area and recommends that the alternatives be adjusted to reflect, at most, the minimum leasing area required by law (800,000 acres). In addition, the draft EIS does not provide assurances that lease stipulations related to surface occupancy and timing restrictions will remain in place over time. The only way of ensuring areas that are important to the PCH are excluded from development is not to lease them in the first place.	Alternative D2 has been modified to offer 800,000 acres for leasing.
70.	Deana	Lemke	Porcupine Caribou Management Board	80214	34	Range of Alternatives	Benchmarks & Criteria Avoiding or minimizing activities that would significantly disrupt ... behavior patterns of the Porcupine Caribou Herd would involve appropriate mitigations Established References International agreement on conservation of PCH Russell & Gunn 2019 Draft EIS deficiency The draft EIS states what the planned mitigations for the presence of caribou will be via Required Operating Procedures but there is no mention of how lease operators are to monitor for or have advance awareness of the imminent arrival or presence of caribou. Expectations for on-site monitoring programs or relationships with government biologists who manage PCH satellite location data are not mentioned.	Management and monitoring plans should be developed in consultation with appropriate federal, state, and NSB regulatory and resource agencies (as stated in ROPs). Additional monitoring plan requirements will be dependent on site-specific proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Steven	Amstrup	Polar Bears International	81368	71	Range of Alternatives	Meteorological Monitoring Station, approximately 110 miles west of the Coastal Plain boundary.2 It is imperative that BLM establish a comprehensive monitoring network within the program area to provide baseline data for an adequate analysis of reasonably foreseeable air quality impacts associated with an oil and gas program and to facilitate tracking of air quality impacts and adaptive management to ensure air quality protection throughout the Coastal Plain. Baseline data must be collected and made publicly available in a revised draft EIS, to ensure that the agency's evaluation of impacts is scientifically sound, reasonable alternatives are considered, and all necessary mitigation measures are evaluated. Beyond establishing baseline air quality monitoring data, however, BLM must complete a more comprehensive, quantitative modeling analysis of future development in this DEIS in order to prevent significant impacts throughout the Coastal Plain (as opposed to taking corrective action after a significant impact is identified by an air quality monitor).	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
72.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	103	Range of Alternatives	Reasonable alternatives that BLM should consider in order to eliminate or mitigate any exceedance of established air quality thresholds include but are not limited to: (1) managing the pace, location, and intensity of development; (2) employing control techniques; or (3) a combination of the two. Failure to consider such alternatives, including the reasonable measures described below, renders the DEIS's range of alternatives inadequate and BLM's conclusions that its oil and gas development program will satisfy the Clean Air Act invalid.	ROPs 5 and 6 contain requirements for future phases of development that will satisfy Clean Air Act requirements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Allison	Athens	—	81746	1	Range of Alternatives	We strongly urge BLM and the Secretary of Interior to reconsider the elimination of the alternative that would have only offered the minimum number of acres for lease mandated by Congress, alongside reconsidering the fact that the 2,000 acres surface disturbance allowance in the statute is a ceiling not a floor.	Alternative D2 has been modified to offer 800,000 acres for leasing. Section 20001(c)(3) of the Tax Act states, "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.
74.	Allison	Athens	—	81746	4	Range of Alternatives	BLM states that it considered, but ultimately did not include, an alternative that would have limited the number of acres available for the lease sale at the minimum 800,000 acres required by the statute for the two lease sales. BLM does not explain why offering a maximum of 800,000 acres for two lease sales does not meet the statutory mandate	Alternative D2 has been modified to offer 800,000 acres for leasing.
75.	Allison	Athens	—	81746	5	Range of Alternatives	There is no reason that BLM has to offer all 2,000 acres (or any of the acres) in surface disturbance suggested by the statute, given that the statute only sets a ceiling for surface disturbance. This is not a reasonable interpretation in light of the Coastal Plain being part of a Wildlife Refuge, a place which is supposed to be for the conservation of species for the American public to appreciate and enjoy for generations to come. BLM can include a 2,000-acre surface facility limitation in the lease sale requirements and BLM can also include a requirement that 0 surface acres be disturbed, given that there is no minimum requirement for how much acreage must be available for disturbance. BLM can impose a 0 acre NSO on the two 400,000-acre leases and still conform to the statutory mandate. BLM has given no reasons for why it has not considered the minimum offering for lease sale with a maximum protection of surface area. BLM has the authority to make this alternative part of the EIS and it is unreasonable not to.	Alternative D2 has been modified to offer 800,000 acres for leasing. Section 20001(c)(3) of the Tax Act states, "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.

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76.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	2	Range of Alternatives	NEPA requires the BLM to "[r]igorously explore and objectively evaluate all reasonable alternatives." ⁹ The range of alternatives the BLM presents and evaluates in the DEIS is woefully inadequate. Rather than exploring a reasonable range of alternatives, the BLM presents variations on a single alternative. Though the Tax Cuts and Jobs Act of 2017 (Tax Act) requires that the Secretary of Interior offer at least 400,000 acres for leasing, ¹⁰ none of the alternatives in the DEIS would offer less than one million acres. Two of the alternatives would make the entire Program Area available for leasing. And only one alternative would not offer portions of the Coastal Plain for leasing "to protect biological and ecological resources." ¹¹ The different stipulations and required operating procedures applicable under each alternative do not constitute a reasonable range of alternatives. The same, or similar, stipulations and required operating procedures apply to all of the alternatives. Under every alternative, the stipulations and required operating procedures are subject to waiver, exception, or modification by the BLM, further undermining any substantive difference in the alternatives.	Alternative D2 has been modified to offer 800,000 acres for leasing. The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	3	Range of Alternatives	All of the alternatives in the DEIS prioritize development over other values, such as ecological, cultural, and subsistence resources. While the Tax Act requires the BLM to offer oil and gas leases, it does not revoke the conservation priorities of the management of the Arctic National Wildlife Refuge. Throughout the NEPA process, the Tribes have raised with the BLM the critical importance of the Coastal Plain to the Porcupine Caribou Herd for calving and post-calving. The Tribes have also explained the significant adverse impacts development in the Coastal Plain would have on the herd and the Tribes. Ignoring these concerns, the BLM has failed to consider an alternative that provides meaningful protections for the Porcupine Caribou Herd's calving and post-calving habitat. BLM has also failed to adequately explain why it didn't consider such an alternative.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. All action alternative address Porcupine caribou herd (PCH) calving and post-calving protections to some extent.
78.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	4	Range of Alternatives	Furthermore, the BLM's development, evaluation, and selection of alternatives is inadequate because the DEIS does not incorporate the information, analyses, and findings from other statutorily-mandated review processes, such as Section 106 of the NHPA. The Council for Environmental Quality's (CEQ) NEPA regulations require: "To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by . . . the [NHPA]."	All statutory obligations have been met, and will continue to be met through the EIS process. All relevant information obtained through the EIS process, and up to signing of the ROD, will be incorporated as appropriate.

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79.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	147	Range of Alternatives	The BLM's development and selection of alternatives has not been carried out in accordance with other statutory obligations. ⁸⁶ For example, the NHPA implementing regulations require the BLM to "ensure that the section 106 process is initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking." ⁸⁷ The BLM initiated the Section 106 process well after it developed and selected the alternatives. Indeed, the BLM has yet to conduct a single Section 106 consultation with the Native Village of Venetie Tribal Government, Arctic Village Council, or Venetie Village Council.	All statutory obligations have been met, and will continue to be met through the EIS process. The BLM initiated consultation for the Section 106 process on April 23, 2018. The BLM is working with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officer (SHPO), USFWS, and consulting parties (which include all interested tribal governments, Alaska Native Claims Settlement Act (ANCSA) corporations, and local governments) in development of a programmatic agreement for Section 106 compliance.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	148	Range of Alternatives	Thus, the Section 106 process has had no effect on the development of alternatives. Therefore, the alternatives discussed in the DEIS fail to take into account effects to historic properties, including cultural landscapes such as Iizhik Gwats'an Gwandaii Goodlit. None of the alternatives represent any effort by the BLM to avoid, minimize, or mitigate adverse effects to historic properties. As the Section 106 implementing regulations make clear: "The [BLM] shall consult with the SHPO[] and other consulting parties, including Indian tribes . . . , to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties."88 Furthermore, the DEIS's section on alternatives fails to address how the Section 106 process will inform the ongoing development and selection of alternatives. The alternative development analysis presented in Figures 29-33 demonstrates that the BLM's Anchor Field concept is wholly inadequate and misleading. Because the BLM based its analysis on this flawed concept, the DEIS failed to adequately consider the impacts of potential development in the Program Area.	In developing the EIS action alternatives, the BLM considered means to protect all key resources, including cultural resources. A primary component of alternatives development was providing for protection of the area the Gwich'in identify as Iizhik Gwats'an Gwandaii Goodlit through protection of the caribou calving and post-calving areas. Additional mitigation measures that further avoid, minimize, or mitigate adverse effects on historic properties may be incorporated in the ROD or as part of the programmatic agreement for Section 106 compliance.
81.	Ruth	Wood	—	83199	6	Range of Alternatives	The other alternatives all offer more than the 400,000 acres in each of 2 lease sales required by the Tax Bill. BLM did not look at any minimal alternative. Given the amount of opposition to any lease sales, BLM must include two minimal alternatives of 400,000 acres each, but currently it does not	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
82.	Henrik	Kulmala	—	83333	1	Range of Alternatives	The BLM appears to have exceeded their mandate by offering larger tracts than mandated by a public law which negated the protected status of the ANWR. They also appear to have ignored the stipulation that the areas being considered have the highest potential for hydrocarbon discovery. These regions have not been explored sufficiently to define the most likely regions to produce hydrocarbons.	Based off best available information, the action alternatives maximize the areas with the highest hydrocarbon potential (HCP); action alternatives balance areas with the highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections). Alternative D2 has been modified to offer 800,000 acres for leasing.
83.	Henrik	Kulmala	—	83333	7	Range of Alternatives	Drilling is generally prohibited in rivers, lakes, or on floodplains, with an exemption allowed by the BLM Case Officer. ⁹ Such drilling is too sensitive to be allowed based on the judgement of a single individual and should be subject to approval by a board of individuals including some not associated with the BLM. There is no mention made in the document of fines, levies, or penalties for disobeying the rules and regulations. These need to be defined in advance and must be severe enough as to discourage improper actions and activities. The cost of disobeying a requirement must be more than a symbolic slap on the wrist or a fine that is less expensive than doing the job per guidelines and operating procedures. ⁹ 2-24: On a case-by-case basis, the BLM Authorized Officer may consider exploratory drilling in floodplains of fish-bearing rivers and streams.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements. The BLM considers performance-based stipulations and ROPs that allow managers to practice adaptive management to ensure that the objectives identified in the EIS are met. This allows the Authorized Officer the ability to tailor requirements to take account of the evolving understanding of the environment and changing technology and techniques at the time of application for a permit.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84.	Withheld	Withheld	WWF-Canada	85059	20	Range of Alternatives	Finally, the three action alternatives BLM proposes in the draft EIS do not present a reasonable range sufficient to analyze differences in impacts to polar bears, since all of the action alternatives assume the entire Coastal Plan will be open to seismic exploration. The BLM must address all these issues in a revised draft EIS.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts on polar bears. The range of impacts related to polar bears for this EIS is discussed in Section 3.3.5.
85.	Elizabeth	Ballard	—	90951	13	Range of Alternatives	The stipulations for protecting cliff-nesting raptors are arbitrary and unlikely to achieve the intended result. A stipulation that may be intended to protect cliff-nesting raptors from disturbance does not appear adequate and is not adequately analyzed in the DEIS. The DEIS notes that raptors are more easily disturbed by human activities than other birds, concluding that “falcons, hawks, and eagles . . . reacted at greater distances [than 656 feet].” ¹⁸ But the DEIS does not contain a mitigation measure that directly addresses impacts to cliff-nesting raptors from human disturbance.	ROPs 25, 30, and 31 all provide protections for cliff-nesting raptors. Lease Stipulations 4 and 9 provide additional protections even though they are not specifically designed to protect cliff-nesting raptors.
86.	Elizabeth	Ballard	—	90951	15	Range of Alternatives	ROP 30 further requires a “hydrological study that indicates no potential impact on the integrity of river bluffs” prior to “extraction of sand or gravel from an active river or stream channel,” ²² but does not explain whether this activity would itself disturb nesting raptors.	It is acknowledged that scientific study and monitoring activities could cause disturbance to animals; the authorizing agency will take all factors into consideration when evaluating a site-specific proposal, and actions will still need to meet the objective of the ROP.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
87.	Elizabeth	Ballard	—	90951	16	Range of Alternatives	The ROP designed to mitigate aircraft disturbance to raptors similarly does not explain how operators will identify raptor nests.	ROP 34 discusses aircraft use plans that would be submitted. It is not up to the aircraft operator to identify raptor nests. During the application for permit to drill (APD), a flight plan would be submitted containing the number of proposed flights. The associated NEPA analysis would identify areas requiring protections related to raptor nests. Site-specific conditions may warrant one approach over another during future analysis associated with project-level authorizations.
88.	Elizabeth	Ballard	—	90951	22	Range of Alternatives	The DEIS arbitrarily uses the lease stipulations for caribou to apply supposed mitigation measures to Snow Geese. Using stipulations for caribou to apply to snow geese is inappropriate and arbitrary. In comparison, regulations applicable to the Arctic National Wildlife Refuge apply specifically to snow geese. ³⁷	Lease stipulations and ROPS designed to protect one resource may also provide protections for additional resources. The benefits or detriments associated with meeting that objective would be analyzed in project-specific NEPA analyses.
89.	Elizabeth	Ballard	—	90951	23	Range of Alternatives	First, the DEIS does not explain where and when barging and screeding would occur.	The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts associated with barging and screening cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
90.	Elizabeth	Ballard	—	90951	27	Range of Alternatives	The DEIS has not analyzed impacts to loons due to a reduction in fish from the loss of deepwater lakes. The area of high-oil potential occurs on a part of the landscape dominated by nonwetland tundra. The DEIS does not explain where and how oil and gas development activities will obtain the water necessary for building ice infrastructure and supporting production phases.	Impacts on loons due to a possible reduction in fish prey are discussed on page 3-94 of the Draft EIS. Water sources for ice infrastructure and supporting production phases are discussed on page 3-58 of the Draft EIS. Lease Stipulations 1 and 3, and ROP 9 (in general) have standards for water recharge and conditions in which surface water can be used for ice construction.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
91.	Elizabeth	Ballard	—	90951	29	Range of Alternatives	The DEIS uses an arbitrary buffer zone as a way to protect eiders. The DEIS ascribes a buffer of 656 feet (about 200 meters) in order to "Avoid and reduce temporary impacts on productivity from disturbance near Steller's or spectacled eider nests." ⁴³ The DEIS also appears to use this same buffer to analyze impacts to all bird species. ⁴⁴ But the DEIS does not do a good job explaining why this buffer is appropriate specifically for eiders, nor does the DEIS explain why this buffer is appropriate for all species. The DEIS does not use complete and appropriate science to determine an appropriate buffer for eiders. But the DEIS does not explain why it arbitrarily chose 656 feet as the appropriate buffer for eiders and for all birds in the project area.	The buffer described is a standard buffer width used by agencies. If mitigation measures apply to multiple resources regardless of objective, the benefits or detriments associated with that objective will be analyzed.
92.	Elizabeth	Ballard	—	90951	32	Range of Alternatives	The description of the barge "route" referenced in the DEIS ⁵³ is wholly inadequate for analyzing the impacts of marine vessel traffic on seabirds and other marine animals. Barges are very likely to be a big component of any oil and gas development in the project area, and the DEIS completely fails to analyze this potential for a very large increase of vessel traffic along the route and in the coastal zone of the project area. More vessels along the route will mean more risk of oil spills, more noise introduced into the marine environment, more ship strikes on marine wildlife, and more hazards for marine birds. ⁵⁴ The DEIS completely lacks the information necessary for the public to understand impacts to seabirds and other marine wildlife along the vessel traffic route.	The hypothetical development scenario anticipates two vessels per year on average. The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts associated with vessel traffic cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
93.	Elizabeth	Ballard	—	90951	33	Range of Alternatives	Moreover, the mitigation measures for seabirds are missing, inadequate, or arbitrary. Lease Stipulation 9 would purportedly protect coastal zones to varying degrees, but under Alternative B would only require a mitigation plan but would not actually prevent any infrastructure in the coastal area, and Alternatives C and D would allow for barges, docks, spill response areas, and pipelines. ⁵⁵ This stipulation would therefore not address impacts that occur on the vessel route from Dutch Harbor.	Lease Stipulation 4 identifies nearshore marine and barrier island habitats as NSO areas. Additionally, the hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts on seabirds are analyzed generally for the program area based off the hypothetical development scenario; the discussion for seabirds can be found in Section 3.3.3.
94.	Elizabeth	Ballard	—	90951	37	Range of Alternatives	The mitigation measures identified in the DEIS do not appear to address the likely impacts to the MPA. As articulated in paragraphs above, it is difficult to ascertain the location, duration, and level of impacts that could occur in the MPA. But the lease stipulation involving coastal areas would only require a plan under Alternative B; and would allow for barges, storage areas, and pipelines in coastal zones under Alternatives C and D. ⁶¹	Lease stipulations and ROPs designed to protect one resource also may provide protections for additional resources. The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
95.	Withheld	Withheld	—	92034	3	Range of Alternatives	The DEIS fails to uphold BLM's legal obligations to offer an adequate range of alternatives. The DEIS offers only three alternatives, all of which allow full oil and gas development. These alternatives fail to adhere to the limits for development and lease sales set by Tax Act. Additionally, the proposed alternatives fail to protect the stated purposes and biological resources of the Arctic Refuge. The DEIS does not offer reasonable alternatives to the proposed oil and gas leasing, nor does it sufficiently analyze the impacts of the alternatives.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
96.	Victor	Joseph	Tanana Chiefs Conference	92086	2	Range of Alternatives	For example, required operating procedures (ROP) for which Tribal input is obligatory include, but not limited to: 1) 7 (Ensure that permitted activities do not create human health risks by contaminating subsistence foods), 2) 28 (Use ecological mapping as a tool to assess wildlife habitat before developing permanent facilities to conserve important habitat type), 3) 29 (Protect cultural and paleontological resources), 4) 34 (Minimize the effects of low-flying aircraft on wildlife, subsistence activities, local communities, and recreationists of the area, including hunters and anglers), 5) 36 (Subsistence consultation for permitted activity), 6) 37 (Avoid conflicts between subsistence activities and seismic exploration), 7) 38 (Minimize impacts from non-local hunting and trapping activities on subsistence resources), 8) 39 (Prevent disruption of subsistence use and access), and 9) 40 (Minimize cultural and resource conflicts). Specifically, an ANILCA 810 analysis requirement for all project activities should be amended to the above required operating procedures.	As noted in footnote 1 of Table 2-3, the BLM will coordinate with appropriate tribes and ANCSA corporations as appropriate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97.	Victor	Joseph	Tanana Chiefs Conference	92086	3	Range of Alternatives	The ROPs need to include an adaptive management process that institutes protocols for monitoring project activities during and following construction, along with monitoring throughout the life of the project(s). An adaptive management procedure for Arctic Refuge leasing should include consultations with the cooperating agencies and their advisors, or authorized agents, as appropriate.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM considers performance-based stipulations and ROPs that allow managers to practice adaptive management to ensure the objectives identified in the EIS are met. This allows the Authorized Officer the ability to tailor requirements to take account of the evolving understanding of the environment and changing technology and techniques at the time of application for a permit. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
98.	Ruth	Wood	—	92475	2	Range of Alternatives	The Draft EIS does include a No Drill Alternative, but then states that the Draft EIS will ignore it because it conflicts with the Tax Bill that requires leasing. That is a false conclusion, and led to BLM ignoring its duty to adequately analyze the No Drill Alternative.	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ's Forty Most Asked Questions Concerning CEQ's NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
99.	Ruth	Wood	—	92475	5	Range of Alternatives	The other alternatives all offer more than the 400,000 acres in each of 2 lease sales required by the Tax Bill. BLM did not look at any minimal alternative. Given the amount of opposition to any lease sales, BLM must include two minimal alternatives of 400,000 acres each, but currently it does not.	Alternative D2 has been modified to offer 800,000 acres for leasing.
100.	Withheld	Withheld	Government of the Northwest Territories	92862	19	Range of Alternatives	The GNWT recommends the BLM provide a definition of "reclaimed" that is consistent with the majority of the purposes for which the Arctic National Wildlife Refuge was established under section 303 of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). The definition of reclaimed should consider the return to functional habitat and the return of the land to a pre-disturbance state, consistent with ROP 35.	The term has been added to the glossary. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
101.	Withheld	Withheld	Government of the Northwest Territories	92862	32	Range of Alternatives	Comment(s) In its analysis of alternatives, the BLM only considers the option of having in total more than 2,000 acres of surface occupation over the lifetime of the project, although other less impactful options are available to it and would do much to inform the assessment of the potential environmental impacts of this project if considered. Unlike the 800,000 acre minimum mandate for leasing, the 2,000-acre limit is a maximum, not a minimum, allowing the BLM to consider options in which only 2,000 acres or fewer than 2,000 acres are occupied in total over the lifetime of the project. Recommendation Given that the impacts on the wildlife protected by the ANWR resulting from the destruction of surface habitat is the primary significant environmental impact from this proposal to mitigate, surface occupancy seems like the key aspect of this project to minimize as a means of mitigating this most significant impact. Therefore, the GNWT recommends options that do this should be considered within the EIS. Further, to the extent that the EIS (e.g. at s. 1.9.1) asserts that allowing less than a rolling 2,000 acres of surface occupancy renders the program not economically viable, it offers no evidence in support of this assertion. The GNWT recommends the EIS explore options in which different, necessarily lesser, amounts of land are occupied in total under the program and must also provide quantitative data on the differences in impacts among the different options.	Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act. As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.

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102.	Withheld	Withheld	Government of the Northwest Territories	92862	33	Range of Alternatives	A BLM officer may grant a waiver, exception, or modification of a stipulation through the permitting process but it is not clear what criteria will be used to determine when a waiver, exception or modification is appropriate or how the lessee and/or regulator will monitor their development to determine if the waiver, exception or modification is having an adverse impact on wildlife and involves additional mitigation. The US General Accounting Office has questioned the consistency and rationale of how BLM waives lease stipulations and operating conditions and concluded that "Without sufficiently detailed documentation of inspections and effective use of data from inspections, BLM is unable to fully assess the effectiveness of its best management practices policy to mitigate environmental impacts". USGAO (2017).³ The level of certainty regarding mitigations decreases with the possibility that a waiver, exception, or modification of a stipulation can occur. Recommendation The GNWT recommends the BLM include in the EIS an analysis of BLM rationale to waive lease stipulations and an evaluation of impact and effectiveness. The GNWT recommends the BLM develop a policy for exceptions and modifications to lease stipulations. The GNWT recommends the rationale supporting each future waiver, exception or modification of a stipulation for a lease in the Coastal Plain be documented and made publicly available. The GNWT recommends the lessees be required to undertake follow up monitoring to determine if the waiver, exception or modification of a stipulation is having an adverse impact on wildlife. If an adverse impact is	The BLM has edited text in Chapter 2 to provide clarifications around the waiver, exception, and modification process. The objectives of ROPs would still need to be met before a waiver, exception, or modification could be granted.

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102. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	discovered the BLM should consider reversing the waiver, exception or modification of that stipulation.	(see above)
103.	Withheld	Withheld	Government of the Northwest Territories	92862	34	Range of Alternatives	Based on the combination of the following sections from the draft EIS it is clear that the No-Surface-Occupancy (NSO) section on the western most section of the Coastal Plains would need to have pipelines and likely a road through it. This is not clearly identified on the maps in the draft EIS: No-Surface-Occupancy (NSO): An area that is open for mineral leasing but does not allow the construction of surface oil and gas facilities in order to protect other resource values. However, "On a case-by case basis, essential pipeline and road crossings would be permitted through setback areas." "Future oil production would use existing North Slope infrastructure, including the Trans-Alaska Pipeline System (TAPS)." Recommendation The GNWT recommends the BLM clarify in the EIS that, at a minimum, No-Surface-Occupancy (NSO) in the western portion of the Coastal Plain is not possible under any of the described alternatives.	PL 115-97 requires that the BLM authorize right-of-ways (ROWs) for essential roads and pipeline crossings. Even in an NSO area, a ROW could still be authorized. This has been clarified in Chapter 2.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
104.	Withheld	Withheld	Government of the Northwest Territories	92862	38	Range of Alternatives	The timing limitation associated with Lease Stipulation 6, Alternative D2 states "If caribou arrive on the calving grounds before May 20, or if they remain in the area past July 20 in significant numbers (greater than approximately 10 percent of the estimated calving cow population or 1,000 during insect-relief periods), major construction would be suspended." It is unclear how close 10% of cows or 1000 caribou would need to be in order to have mitigation remain in place. The effectiveness of this mitigation cannot be assessed until the terms "major construction activities" or "remain in the area" are defined. The enforcement of this mitigation is also made more difficult without a clear definition of those two terms. Recommendation The GNWT recommends "major construction activities" and "remain in the area" be clearly defined. Given the importance of the program area to PCH, these terms need to be well defined to provide certainty to operators and regulators on when activities must be suspended.	The term "major construction activities" has been defined in the glossary. As noted in footnote 1 of Table 2-3, appropriate federal, state, and local agencies will be coordinated with as appropriate, and can convene to reassess methodologies as techniques change.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	Withheld	Withheld	Government of the Northwest Territories	92862	39	Range of Alternatives	Lease stipulation 6 and 7 both require that major construction activities using heavy equipment, but not drilling from existing production pads, would be suspended under various circumstances. The effectiveness of these Lease Stipulations requires baseline information and the integration of monitoring and mitigation that results in adaptive management with respect to caribou mitigations. Recommendation The GNWT recommends the BLM provide studies or evidence to demonstrate that suspending major construction activities while still allowing drilling and activities is an effective mitigation measure. If evidence does not clearly support the effectiveness of this mitigation the lease stipulation should be changed to include the suspension of major construction, drilling, and other project activities (maintenance activities, traffic, etc.) from existing production pads. The GNWT recommends the BLM develop a framework that includes a clear list of activities that would be suspended, the triggers for their suspension, and the means of determining that the triggers are being addressed in the event that calving or post-calving caribou enter a conservatively established buffer zone around infrastructure, roads, and work sites.	The term "heavy equipment" has been added to the glossary.

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106.	Withheld	Withheld	Government of the Northwest Territories	92862	40	Range of Alternatives	The GNWT recommends the BLM require the operator to monitor PCH responses to a suspension of major construction activities while continuing drilling under Lease Stipulation 7 and adaptively manage their operations should PCH exhibit a negative response to drilling.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM also will consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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107.	Withheld	Withheld	Government of the Northwest Territories	92862	41	Range of Alternatives	The GNWT recommends the BLM require a wildlife management and monitoring plan that identifies how they will monitor the PCH and adaptively manage their operations based on the effectiveness of their mitigations.	Heavy equipment has been defined in the glossary. Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
108.	Withheld	Withheld	Government of the Northwest Territories	92862	42	Range of Alternatives	To ensure that the intent of the timing limitation is maintained and a precautionary approach is taken, the GNWT recommends adding the underlined text in italics: "...the resource agencies. The BLM Authorized Officer may only extend, and not decrease, the time limit on the suspension of activities. The intent of this requirement..." If this recommended wording is not adopted the criteria to be considered when changing the suspension dates should be provided in this lease stipulation.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
108. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
109.	Withheld	Withheld	Government of the Northwest Territories	92862	43	Range of Alternatives	Lease Stipulation 7 has the following Requirement/Standard: a. The following ground and air traffic restrictions would apply to permanent oil and gas-related roads in the areas and time periods indicated: i) Within the calving habitat area, from May 20 through June 20, traffic speed should not exceed 15 miles per hour when caribou are within 0.5 mile of the road... The lessee should submit with the development proposal a vehicle use plan that considers these and any other mitigation. Recommendation Estimating distances unassisted can be subjective. The GNWT recommends that during the calving period roads within calving habitat be closed and operations suspended. If this recommendation is not accepted the GNWT recommends the vehicle use plan clearly outline how a distance of 0.5 miles is to be estimated or determined by drivers. The impact of darkness or poor weather on the determination of the 0.5 mile limit should also be addressed in the vehicle use plan. The GNWT recommends the vehicle use plan direct the lessee to install additional signage along roads to alert drivers when caribou are in an area. Wildlife should always have the right of way on	Traffic in areas with calving caribou would be minimized or eliminated as possible through the vehicle use plan, which could include recommendations such as periodic markers every 0.5 miles, personnel training, or speed restrictions during extreme weather (i.e., fog).

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109. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	roads. The GNWT recommends a plan be developed to determine the effectiveness of the mitigations.	(see above)
110.	Withheld	Withheld	Government of the Northwest Territories	92862	44	Range of Alternatives	Lease Stipulation 7 has a Requirement/Standard that states "The following ground and air traffic restrictions would apply to permanent oil and gas- related roads in the areas and time periods indicated..." The restrictions that follow are not related to air traffic, with the possible exception of the suggestion that the lessee limit trips. Recommendation The GNWT recommends the BLM provide air traffic restrictions for this lease stipulation or link the lease stipulation to ROP 34 - Use of Aircraft for Permitted Activities. Low level flights over calving habitat during calving should be banned.	Text has been edited in ROP 34 for clarity.
111.	Withheld	Withheld	Government of the Northwest Territories	92862	45	Range of Alternatives	The timing limitation for Alternative C and D states that "Sections of road would be evacuated whenever an attempted crossing by a large number of caribou (approximately 100 or more) appears to be imminent." It is not clear why the threshold was set at 100 caribou or how the operator would determine that caribou wish to cross the road or that the crossing is imminent. It is also not clear how effective this mitigation will be.	Additional text has been added to Lease Stipulation 8.

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112.	Withheld	Withheld	Government of the Northwest Territories	92862	46	Range of Alternatives	The GNWT recommends the lessee's vehicle use plan (or other management plan) provide clear direction on how a driver should determine a crossing is imminent. The GNWT recommends the lessee be required to monitor crossing deflection rates and crossing success rates and adaptively manage their operations if it is found that caribou are avoiding crossing the road. The GNWT recommends the BLM provide a rationale on why 100 caribou was chosen as the threshold and provide supporting evidence that this mitigation will be effective, especially for large aggregates of Porcupine caribou ("super groups").	The vehicle use plan developed by the lessee could include recommendations specific to caribou road crossings. Additional text has been added to Lease Stipulation 8.
113.	Withheld	Withheld	Government of the Northwest Territories	92862	47	Range of Alternatives	ROP 4 directs the lessee, operator or contractor to prepare and implement bear-interaction plans. "The plans would include specific measures identified in the current United States Fish and Wildlife Service (USFWS) Polar Bear Mitigation Plan and would be adapted as needed for grizzly bears." Recommendation The GNWT recommends the BLM provide direction on how measures in the USFWS Polar Bear Mitigation Plan should be adapted for grizzly bears.	The bear interaction plan would be approved by the USFWS, but it is the operator's document as part of the MMPA Letter of Authorization for incidental take (ITR/LOA). It is not within the BLM's authority to provide direction on how measures would be adapted for grizzly bears.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
114.	Withheld	Withheld	Government of the Northwest Territories	92862	48	Range of Alternatives	ROP 17 states that "Construction of a gravel road for permanent oil and gas facilities would be prohibited for exploratory drilling. Use of a previously constructed road or pad may be permitted if it is environmentally preferred." Permanent oil and gas facilities are defined in the draft EIS as "Production facilities, roads, airstrips, production pads, docks, seawater treatment plants, and other structures associated with oil and gas production, that occupy land for more than one winter season. Material sites and seasonal facilities, such as ice roads, are excluded, even when the pads are designed for use in successive winters." Allowing the construction of a gravel road to a non-permanent oil and gas facility could result in multiple gravel roads being constructed that have no destination or result in a lessee claiming that a facility will be in use for only one season even if they know differently in order to build a road. Recommendation The GNWT supports the inclusion of this ROP. However, the GNWT recommends the mitigation could be strengthened by removing reference to "permanent oil and gas facilities."	Text has been edited in Chapter 2 as recommended.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
115.	Withheld	Withheld	Government of the Northwest Territories	92862	50	Range of Alternatives	ROP 23 requires a vehicle use management plan to be developed by the lessee/operator/contractor. The management plan would minimize or mitigate displacement during calving and would avoid, to the extent feasible, delays to caribou movements and vehicle collisions during the midsummer insect season, with traffic management following industry practices. Recommendation The GNWT recommends the vehicle use management plan include an adaptive management component. The GNWT recommends the vehicle management plan avoid delays to caribou movements and vehicle collisions at all times, not just during the midsummer insect season. The GNWT recommends a regional database be made available, so overall impacts can be monitored. The BLM Officer, State of Alaska, relevant wildlife management authorities in Canada including the Government of the Northwest Territories, and the Porcupine Caribou Management Board should have access to monitoring data.	The BLM has revised ROP 23 to remove the phrase "during the midsummer insect season." The vehicle use plan will work to minimize additional impacts. Sharing of management monitoring data would be initiated by the relevant wildlife management authorities and is outside the scope of this EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
116.	Withheld	Withheld	Government of the Northwest Territories	92862	52	Range of Alternatives	The objective of ROP 33 is to "Provide information to be used in monitoring and assessing wildlife movements during and after construction." The information that is required under ROP 33 is related to the location of project infrastructure. It is unclear how information on the infrastructure will be used to assess wildlife movements during and after construction or who would be undertaking the monitoring and assessment of wildlife movements. Information collected under this ROP has value to various management authorities in Canada. Recommendation The GNWT recommends the ROP 33 be revised to include details on who will be undertaking monitoring and assessing wildlife movements during and after construction. Information should also be added to ROP 33 to outline how adaptive management will be incorporated into the project design and operations if the assessment shows that wildlife movement is being adversely impacted by the project. The GNWT recommends baseline information on wildlife movements and results from any project monitoring, such as monitoring results from the vehicle use plan, be provided to the BLM Authorized Officer, State of Alaska, relevant wildlife management authorities in Canada and the Porcupine Caribou Management Board.	The BLM has the ability to manage adaptive management principals by modifying requirements of ROPs through the waiver, exception, or modification process as needed (IM 2008-032 Attachment 1, page 5—the BLM or operators can initiate adaptive management modifications). Sharing of management monitoring data, if appropriate, would be initiated by the relevant wildlife management authorities and is outside the scope of this EIS. Federal, state, and local wildlife management agencies would evaluate data provided under ROP 33 to assess wildlife movements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
117.	Withheld	Withheld	Government of the Northwest Territories	92862	53	Range of Alternatives	The timing restriction associated with the number of helicopter landings under Alternative B and C is limited to May 20 through June 20. The timing restrictions are expanded to May 20 to July 20 under Alternative D. The Coastal Plain lands are extremely important in the post-calving insect relief period, in addition to the calving period, and the behavior of large aggregations around infrastructure is unknown (Russell and Gunn 2019). For these reasons the GNWT suggest that the calving and post calving periods from May 20 to July 20 be included in all Alternatives.	The suggestion described in this comment is within the range of alternatives considered in this EIS.
118.	Withheld	Withheld	Government of the Northwest Territories	92862	54	Range of Alternatives	ROP 42 prohibits the chasing of wildlife with ground vehicles. ROP 42 should be strengthened to include for distances for yielding the right of way to wildlife on roads. An example for caribou from the Ekati mine in the NWT: Distance of Caribou from the Road Speed Guideline (m = metre; km/h = kilometres per hour): · less than 100 m driver to remain stopped · 100 to 200 m driver to proceed at 20 km/h · 200 to 500 m driver to proceed at 40 km/h · 500 m or more driver to proceed at 60 km/h Recommendation The GNWT recommends the Standard in ROP 42 be expanded to yielding the right of way to all wildlife on roads and ground vehicles should remain away from any wildlife, where possible. These distances should be clearly defined.	The vehicle use management plan identified in ROP 23 (section g) will contain this level of specificity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119.	Withheld	Withheld	Government of the Northwest Territories	92862	55	Range of Alternatives	The BLM states in section 2.3 of the draft EIS that an alternative that would make only 800,000 acres available for lease sales would also be similar in concept to Alternatives D1 and D2 (which consider leasing approximately 1,037,200 acres). Based on this the BLM eliminated the alternative where only 800,000 acres would be made available for leasing from detailed analysis. The GNWT believes the option to make only 800,000 acres of land available for lease sales is not substantially similar in design to other Alternatives and does not meet any of the other criteria for exclusion from detailed analysis. The BLM also stated that the actual potential development area would be much less than 800,000 acres with the 2,000-acre limitation on surface disturbance and that was a factor in not evaluating the 800,000 acres option. This is irrelevant, as PL 115-97 does not state that the total potential development area must be 800,000 acres. Also, the Tax Act only mandates the lease of the 800,000 acres with the best hydrocarbon potential - it does not mandate the proposed categories (which are not defined in the EIS) of hydrocarbon potential land, nor does it mandate the lease of all lands within a certain category. The alternative analyzed in the EIS with the smallest proposed acreage to lease is roughly 200,000 acres or approximately 25%, higher than this minimum. To the extent that the EIS claims that a lease of 800,000 acres of the highest hydrocarbon potential land is not economically viable, it offers no data or analysis justifying this conclusion. There is no stated project purpose, identified need or legal requirement to lease more than the 800,000 acres required by PL 115-97. The most conservative interpretation of section 20001 of PL	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	115-97 should be put forward as a possible alternative because it is feasible, meets the requirements set out in PL 115-97, is substantially different in design to Alternative A-D, would lead to a different outcome than the other Alternatives and does not meet any of the criteria listed above for exclusion of analysis. An alternative that considers only 800,000 acres for lease would be consistent with the conservation needs (generally) of species covered by international agreements. Given NEPA's mandate at s. 102(C)(ii) to speak to any adverse impact which cannot be avoided, the analysis offered in this EIS does not make it clear what the actual minimum, truly unavoidable impact of this program is because the alternatives it offers do not consider the range of factors and mitigations as detailed in these comments or the minimum leasing scenario mandated by the Tax Act. This would also not seem to be precluded by the "purpose and need" of the EIS as articulated within this EIS. Such analysis and minimum impact should be contained within the EIS.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
120.	Withheld	Withheld	Government of the Northwest Territories	92862	56	Range of Alternatives	The GNWT recommends a supplemental EIS to include an Alternative based on section 20001(c) of PL 115-97, and that consists of the following: · One lease sale in 2021 of 400,000 acres of land that has the highest potential for the discovery of hydrocarbons. If the entire 400,000 acres of land is not leased during the first sale the unleased land quantum will not be put up for sale again or added to the 400,000 acres that is required for lease sale in 2024 (i.e., the second sale will not be 400,000 acres plus the unleased land amount from the first sale). · A second lease sale in 2024 of 400,000 acres of land that has the highest potential for the discovery of hydrocarbons. · There will be only two lease sales. This is different from the draft EIS Alternatives that contemplate more than two lease sales, as described in Section 1.8 of the draft EIS. · Provide certainty on which 400,000 acres of land will be put up for lease. · Seismic activity would only occur in the blocks of land being considered for leasing. · Consider conservative ROP and lease stipulations, similar to those presented in Alternative D. The GNWT also requests that BLM to supply data and/or rationale as to why it considered the 800,000-acre option not to be economically viable, or to alter its conclusion if it is unable to provide such data. The GNWT also recommends that the BLM eliminate its three categories of HCP land and focus on its analysis on a set volume of best HCP land (e.g. best 800,000 acres or another number). The 800,000-acre option should consider all additional factors recommended herein and elsewhere establishing a true minimum impact alternative for this proposal.	Alternative D2 has been revised to offer 800,000 acres of land for leasing. The suggested alternative would have impacts similar to alternatives already analyzed. The BLM would expect little to no difference in impacts under such an alternative. This is because lands that were offered but not leased in the first sale are unlikely to be leased in a second sale a few years later given that exploration is unlikely to substantially advance during that time period. The BLM has added additional text to Section 2.3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
121.	Withheld	Withheld	Government of the Northwest Territories	92862	72	Range of Alternatives	Lease Stipulation 9 for Alternative C does not permit a central processing facility within one mile inland of the coast (or two miles inland under Alternative D). In the central portion of the Coastal Plain, the land is Native conveyed and not part of the area where these lease stipulations apply. The quantitative analysis by Russell and Gunn 2019 shows that the area where the PCH is most likely to come within one mile of the coast is just west of the Native conveyed land, near Collison Point. It is unclear from text in Lease Stipulation 9 and page 3-119 if there technically could be a central processing facility within one mile of the coast on native lands and the cumulative impacts of this. Recommendation The GNWT recommends, as part of the cumulative impact assessment, the BLM conduct a quantitative analysis to evaluate the potential effectiveness of Lease Stipulation 9 for the PCH (and CAH) should a central processing facility be constructed on Native conveyed lands.	Additional analysis of Lease Stipulation 9 has been added to Section 3.3.4.
122.	Withheld	Withheld	Chevron U.S.A. Inc.	92880	2	Range of Alternatives	We are concerned the alternatives defined in the DEIS do not meet the Purpose and Need of the Leasing Program, given the significant extent to which access could be limited through NSO, setbacks and noleasing stipulations. We find the DEIS does not create a record for why such access limiting requirements are necessary	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
123.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	8	Range of Alternatives	The BLM provides no information on how decisions to waive, exempt or modify stipulations would be made, whether opportunities for public participation would be offered, or what oversight would occur.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
123. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	details. Additional text has been added for clarification in Chapter 2. Public involvement requirements are in IM 2008-032, Attachment 1, and would be adhered to.
124.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	41	Range of Alternatives	Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements. ⁸⁴ However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what "major construction activity" means.) Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification.	Lease Stipulation 6 provides additional protections on top of ROP 23 for caribou under Alternative D2. The suggestion described in this comment is within the range of alternatives considered in this EIS. The BLM has added the definition of "major construction activity" to the glossary. PCH primary calving habitat area is identified in the note of Lease Stipulation 7. The Draft EIS maps incorrectly identify these kernels as concentrated calving areas; they were based on 95 percent kernel contours. The BLM has corrected this in the Final EIS.
125.	Alice	Levine	—	94086	4	Range of Alternatives	All of the action alternatives offer considerably more acreage than is required by the Tax Act. The DEIS gives no reason why it is offering 66 to 100 percent of the 1.56 million-acre Coastal Plain for leasing purposes in the action alternatives, when Congressional direction only stipulated "at least" 400,000 acres be offered-just 25 percent of the total program area.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
126.	—	—	Alaska Department of Natural Resources	94102	2	Range of Alternatives	Alternatives D-1 and D-2 do not account for the known data gap because they eliminate the southeastern part of the Coastal Plain from oil and gas leasing entirely. Without the ability to lease, companies are unlikely to expend resources conducting exploratory seismic surveys in the unleaseable areas, thus eliminating a valuable opportunity to update assessments of the subsurface resource potential using current technology. BLM should clarify in the Final EIS that Alternatives D1 and D2 were carried forward for detailed analysis but were ultimately determined to be inconsistent with the Tax Act because of these issues and therefore cannot be selected as the preferred alternative.	All action alternatives are designed to meet the purpose and need, and are compliant with PL 115-97.
127.	—	—	Alaska Department of Natural Resources	94102	21	Range of Alternatives	This section also needs to recognize that ANILCA established the Mollie Beattie Wilderness Area on the Refuge, which included establishing specific boundaries. Applying a wilderness area buffer that extends beyond that boundary into the Coastal Plain and applies wilderness area protections, such as NSOs, beyond the wilderness area boundaries is inconsistent with ANILCA (Page 3-217).	Since the NSO area identified along the boundary of the Mollie Beattie Wilderness Area would not establish a withdrawal, conservation system unit, or similar area, it is not precluded by Section 1326 of ANILCA.
128.	Withheld	Withheld	—	94436	3	Range of Alternatives	The DEIS fails to uphold BLM's legal obligations to offer an adequate range of alternatives. The DEIS offers only three alternatives, all of which allow full oil and gas development. These alternatives fail to adhere to the limits for development and lease sales set by Tax Act. Additionally, the proposed alternatives fail to protect the stated purposes and biological resources of the Arctic Refuge. The DEIS does not offer reasonable alternatives to the proposed oil and gas leasing, nor does it sufficiently analyze the impacts of the alternatives.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
129.	Jason	Schwartz	Institute for Policy Integrity	94627	6	Range of Alternatives	alternatives D1 and D2 are very similar to each other, in some cases presenting identical stipulations or very minor differences between them, and so BLM has failed to meaningfully assess a range of reasonable alternatives.	The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA. In addition, Alternative D2 has been modified to offer 800,000 acres available for leasing.
130.	Jason	Schwartz	Institute for Policy Integrity	94627	8	Range of Alternatives	BLM also failed to consider other possible stipulations that would protect the fragile ANWR ecosystem and reduce other environmental effects, such as: * More stringent time restrictions with respect to critical habitat; * More stringent stipulations concerning land use disturbance, such as more nosurface occupancy stipulations; * More stringent stipulations concerning seismic exploration surveys	The BLM considered all suggestions for stipulations that would protect the Arctic National Wildlife Refuge ecosystem. The alternatives were developed through identification of mitigation measures for protection of the numerous resources within the Coastal Plain. The mitigation measures, which are comprised of proposed lease stipulations and ROPs, vary by each action alternative to provide differing levels of protection for the numerous resources, while complying with all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
131.	Matthew	DePaolis	—	95032	2	Range of Alternatives	Second, pursuant to the requirements set forth in 42 U.S.C. 4331, the DEIS does not fully describe the ramifications of allowing the issuance of drilling leases in the Arctic Refuge. The DEIS must take into account all direct and indirect effects of granting the lease, as it is not reasonable to say the lease would be granted without the drilling eventually occurring. In accordance with NEPA, alternatives must be discussed. However, the DEIS does not realistically look at 'Alternative A', the no-action alternative. The DEIS claims that this alternative is not considered, just included as a reference, citing that it is outside the scope of the stated aims. However, this is because the stated aims of the project are too narrow. By defining the project as "oil and gas leases in the arctic refuge" there has been no space for a reasonable alternative of not issuing the leases to be considered. Only by expanding the scope to something in the interest of the American public, whether that is "expanding the United States oil production" or "reducing the dependence of the United States on foreign oil" can a true alternative to this project be considered.	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ's Forty Most Asked Questions Concerning CEQ's NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Refuge.
132.	Brook	Brisson	Trustees for Alaska	96981	17	Range of Alternatives	Moreover, it is unclear when BLM will grant acreage to companies. These types of decisions are important for project developers and will have implications for their development timelines since ensuring adequate acreage available for development will be essential. For example, will BLM grant the acreage: ? Following lease sales to successful bidders? ? When BLM approves development plans? ? When permits are secured? ? When construction begins?	This information will be provided in the Detailed Statement of Sale issued prior to each lease sale. Additional text has been added to Section 3.2.6.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Brook	Brisson	Trustees for Alaska	96981	19	Range of Alternatives	The BLM identified various lease stipulations or required operating procedures in the EIS, but all of these can be waived, exempted, or modified. Accordingly, they are insufficient to serve as an enforcement mechanism for the development limitation...However, the EIS lacks a no surface occupancy stipulation applicable to all acreage of the Coastal Plain. In fact, there are no specific stipulations in Chapter 2 that indicate there will be a limitation on surface disturbance or that provide a general notice to the lessors that BLM may require a cessation of surface disturbing activities should the acreage limits be achieved. These types of stipulations must be included in every lease and permit issued to make it clear that BLM and the leaseholders are beholden to these limitations when issuing a lease.	Clarifying text has been added to Chapter 2 related to the waiver, exemption, and modification process. Additional information related to surface-disturbing activities will be provided in the Detailed Statement of Sale issued prior to each lease sale.
134.	Brook	Brisson	Trustees for Alaska	96981	20	Range of Alternatives	At a minimum, BLM must be very clear in its lease terms that it is not granting any rights to lessees to conduct any oil and gas activities and that BLM retains full authority to outright prohibit oil and gas activities on any lease issued at any time during the lease term. This is contrary to how BLM currently describes leases. ⁷⁴ BLM also acknowledges that its authority to deny activities on leases is conditioned on what is in the actual lease terms. ⁷⁵ But without a clear restriction and reservation of rights, BLM could be in the position it now finds itself in the NPRA, where it has granted leases that, according to the agency, do not allow it to reject proposals and prohibit activities. ⁷⁶ If BLM does not identify an enforcement mechanism and clearly retain the authority to prohibit activities on any leases it may grant, BLM cannot ensure that it will comply with the 2,000-acre limitation.	Leases will state that the BLM cannot approve development in excess of the 2,000-acre limit. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135.	Brook	Brisson	Trustees for Alaska	96981	21	Range of Alternatives	BLM has indicated that it intends to rely on use of temporary facilities (on snow and ice) and reclamation so that once some acreage has been disturbed, it can be deemed only temporarily disturbed or reclaimed and then new acreage can be disturbed. As explained above, this interpretation cannot carry forward. And as explained below, reclamation of Arctic tundra and ecosystems is notoriously challenging and long-term. BLM must establish systems to ensure there has not been damage below snow and ice. Further, there must be inspection standards in place to verify reclamation before those acres can be accepted. Using operator "reclamation plans" is not sufficient. A separate review of the ground multiple years later (given the slow speed at which Arctic ecosystems regenerate) must be required before these acres can be deemed reclaimed for purposes of permitting additional surface disturbance.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. A reclamation plan would be approved by the BLM Authorized Officer (as noted in ROP 35). Approved plans would provide the standard by which full reclamation is deemed achieved. The BLM would conduct inspections of ice and/or snow recovery to ensure resources are not damaged and are in compliance with the terms and conditions of the authorized activity.
136.	Brook	Brisson	Trustees for Alaska	96981	30	Range of Alternatives	The draft EIS's range of alternatives is inadequate for multiple reasons. The draft EIS fails to analyze many reasonable alternatives and proposals submitted by the public at scoping. ¹¹¹ This includes minimized lease acreage; deferred leasing; alternatives with non-waivable stipulations, best management practices, and required operating procedures; alternatives that do not allow development until specific FWS findings are made; alternatives that preclude future development or only permit contiguous development; and economics-based alternatives. ¹¹² These recommendations are not reflected in BLM's three action alternatives.	Alternative D2 has been modified to offer 800,000 acres for leasing. Alternatives that were not carried forward for analysis are discussed in Section 2.3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
137.	Brook	Brisson	Trustees for Alaska	96981	36	Range of Alternatives	While the Tax Act sets out one development-oriented statutory purpose for the Coastal Plain, it preserves the other protective purposes and mandates. BLM is obligated "to reconcile the two, if possible, and to give effect to each." ¹²¹ The agency can do this only if it develops one or more alternative approaches to a leasing program to maximize protection of the biophysical environment and other wilderness characteristics of the Coastal Plain. Alternatives can accomplish this by minimizing and phasing the acreage leased, by reducing the area of surface disturbance, by proposing more restrictive and non-waivable lease provisions, by deferring leasing or implementation, or through a combination of these approaches. Because the draft EIS includes no such alternatives, and fails to provide rational, legally-sufficient reasons for that failure, as elaborated below, it is deficient under NEPA and must be revised and reissued.[¹²¹ Fed. Trade Comm'n v. A.P.W. Paper Co., 328 U.S. 193, 202 (1946).]	Alternative D2 has been modified to offer 800,000 acres for leasing. Alternatives that were not carried forward for analysis are discussed in Section 2.3.
138.	Brook	Brisson	Trustees for Alaska	96981	39	Range of Alternatives	No alternative considers making 800,000 acres available and none considers leasing in a phased approach that reduces total acreage ultimately leased below that level because areas offered initially and not leased may be included in the second 400,000-acre sale. Both of those alternatives need development and study in a revised DEIS.	Alternative D2 has been modified to offer 800,000 acres for leasing. Alternatives that were not carried forward for analysis are discussed in Section 2.3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
139.	Brook	Brisson	Trustees for Alaska	96981	40	Range of Alternatives	In the first place, it is patently wrong that BLM needed to include areas with medium and low hydrocarbon potential to meet the 800,000-acre minimum required by the Tax Act. ¹⁴³ Even were it the case that the Tax Act required leasing of 800,000 acres, that would not require inclusion of all medium potential areas, let alone any low potential ones. BLM is required to offer "those areas that have the highest potential for the discovery of hydrocarbons." ¹⁴⁴ BLM states that 427,900 acres have high potential, 658,400 acres have medium potential, and 477,200 acres have low potential. ¹⁴⁵ BLM then states that to reach the 800,000 minimum acreage, it must make acreages within low and medium potential areas available. ¹⁴⁶ If there are 427,900 acres of high potential areas, BLM would only need to identify 372,100 acres of medium potential areas, about 57% of them, to reach 800,000 acres, and no acreage in the low-potential areas. The acres identified of medium potential areas must also be the acreage identified as having the highest potential within this category.	Alternative D2 has been modified to offer 800,000 acres for leasing. Based off best available information, the action alternatives maximize the areas with the highest HCP while balancing with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included (while balancing resource protections).

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140.	Brook	Brisson	Trustees for Alaska	96981	41	Range of Alternatives	Equally fatal to BLM's justification, the agency is not required to affirmatively lease 800,000 acres, only to offer that acreage in two lease sales.¹⁴⁸ Notably, though, in recent bidding for federal on-shore oil and gas leases on the North Slope, BLM sold only 6% of the acreage offered, and none estimated as having high potential for hydrocarbon development.¹⁴⁹ This it is highly unlikely that the agency will sell all, or even most, of its initial offering. Under the terms of the Tax Act, it is very likely that BLM would then be required to re-offer in the second lease sale any unsold high-potential acres up to 400,000, as being among "those areas that have the highest potential for the discovery of hydrocarbons."¹⁵⁰ The second lease sale could readily offer for lease few, or conceivably no, additional acres to the initial 400,000 acres offered. In short, not only does the Tax Act not require BLM to lease more than 800,000 acres, it makes it possible to lease far less. This phased approach is one that the agency must develop into a full alternative, consider, and disclose the impacts from in a revised draft EIS,¹⁵¹ consistent with the Tax Act and the numerous other legal obligations that apply to an oil and gas program.	Such an alternative would have impacts similar to alternatives already analyzed. The BLM would expect little to no difference in impacts under such an alternative. This is because lands that were offered but not leased in the first sale are unlikely to be leased in a second sale a few years later given that exploration is unlikely to substantially advance during that time period.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
141.	Brook	Brisson	Trustees for Alaska	96981	42	Range of Alternatives	It is no answer, as BLM states, 152 that the Tax Act limits certain kinds of surface-disturbing activities within the Coastal Plain to 2,000 acres. In the first place, BLM has discretion to limit such activities to far fewer than 2,000 acres - and for obvious environmental reasons needs to consider alternatives that do so. In the second, all of BLM's action alternatives allow the same level of development - the full 2,000 acres. Even if the full 2,000 acres were needed for any leasing program (based on BLM's erroneous interpretation), increasing leased acreage beyond the minimum statutorily required would occasion impacts from numerous other activities. Developing greater lease acreage necessarily entails more equipment, man hours, vehicle trips, ice road traffic, barging, coastal landings, pipeline miles and similar undertakings that affect the environment. It also likely occasions more exploratory activity, such as seismic surveying.	Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
142.	Brook	Brisson	Trustees for Alaska	96981	43	Range of Alternatives	The third reason the draft EIS asserts for failing to consider alternatives that lease 800,000 (or fewer) acres is that it would be "similar in concept to Alternatives D1 and D2, which make only 1,037,200 acres available for lease sales." ¹⁵³ But either version of alternative D would offer 237,200 acres, almost 30%, more in the Coastal Plain for leasing than an alternative offering only 800,000 acres. ¹⁵⁴ ...BLM's proffered reasons for not analyzing acreage minimizing alternatives are arbitrary and capricious, and its failure to assess them violates NEPA's requirement to evaluate a reasonable range of alternatives. Similarly, BLM's statement that an 800,000-acre alternative would be similar in concept to Alternative D is faulty because it is based on the premise that only acreage numbers would be different, and that BLM need not offer any additional and different protections. Alternatives could be meaningfully different if BLM offers meaningfully different protections. Additionally, this fails to account for the fact that under BLM's three action alternatives (including the two variations under Alternative D), there are only two acreage amounts offered.	Alternative D2 has been modified to offer 800,000 acres for leasing.
143.	Brook	Brisson	Trustees for Alaska	96981	52	Range of Alternatives	The draft EIS ignores the need to protect the resources of the Refuge from climate change by tailoring lease terms that would delay or stagger the extraction and combustion of the leased oil and gas to mitigate the effect on stimulating demand. The draft EIS does not even provide any discussion of why it did not consider such an alternative, despite comments raising the need to evaluate such alternatives. ¹⁶⁰	Operators are required to explore and develop the oil and gas resources of leased areas per 43 CFR 3130. Alternatives that were not analyzed in detail are included in Section 2.3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
144.	Brook	Brisson	Trustees for Alaska	96981	55	Range of Alternatives	Similar reasoning also applies to delaying approvals to conduct activities connected with exploration and development of leases. Once a lease is issued, the BLM still has to evaluate and issue approvals for on-the-ground activities associated with exploration and development and can condition exploration and development based on specific circumstances being met. After an approval is issued, activities may proceed that may harm the resources of the Coastal Plain. Delaying exploration and development will avoid immediate harm and provide an opportunity to consider new data and technology. BLM should consider an alternative to suspend leases, which permits the agency to toll the terms of leases, as well as the obligations of leaseholders to make rental payments. BLM has used this authority to suspend leases in the interest of conservation of natural resources, which the agency defines as both preventing harm to the environment and preventing loss of mineral resources.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.
145.	Brook	Brisson	Trustees for Alaska	96981	56	Range of Alternatives	BLM has the ability and obligation to undertake an analysis of the benefits of delaying leasing, which can be both qualitative and quantitative. Given the importance and vulnerability of the Coastal Plain of the Arctic Refuge, these alternatives, which were proposed at scoping, were reasonable, distinguishable from the alternatives considered in the Draft EIS and should have been analyzed.	Operators are required to explore and develop the oil and gas resources of leased areas per 43 CFR 3130. Alternatives that were not analyzed in detail are included in Section 2.3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
146.	Brook	Brisson	Trustees for Alaska	96981	74	Range of Alternatives	Additionally, BLM does not describe or analyze the difference between the stipulations and ROPs, and if they are treated by the agency differently or will have different impacts. For example, Lease stipulation 6 refers to ROP 23 for its requirements. What does this mean for how BLM will apply them? Also, the term "BMPs" is sometimes used but it is unclear what they are or how BLM will incorporate them into the program. For example, the draft EIS states, "the frequency of spills would be limited by BMPs." 221 BMPs must be explained and required, and their effectiveness demonstrated, for BLM to reach such conclusions.	The BLM has removed references to best management practices. The lease stipulations and ROPs are part of the alternatives analyzed in Chapter 3.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
147.	Brook	Brisson	Trustees for Alaska	96981	75	Range of Alternatives	Without any criteria for granting waivers, exceptions and modifications, there is not reliability or foreseeability as to how and when the stipulations will be applied, resulting in little certainty that the stipulations will protect fish, wildlife, water, air, vegetation or wilderness. The lack of sideboards on granting waivers, exceptions and modifications also renders a NEPA analysis that relies on their effectiveness deficient, since their continued application depends on the unfettered discretion of the BLM authorized officer. The U.S. Government Accountability Office has opined that BLM's failure to have consistent standards or practices in waiving lease stipulations and operating procedures means that the effectiveness cannot be measured: "[W]ithout sufficiently detailed documentation of inspections and effective use of data from inspectors, BLM is unable to fully assess the effectiveness of its best management practices polity to mitigate environmental impacts."226	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
148.	Brook	Brisson	Trustees for Alaska	96981	76	Range of Alternatives	While the ROPs similarly lay out requirements that apply to a variety of resources, the language on page 236 of the draft EIS for conditions permitting a waiver of ROP 46 implies that ROPs are also subject to waivers, exceptions and modifications, rendering them similarly questionable as a "basis for analyzing the potential impacts of the alternatives in this Leasing EIS." Moreover, the language in the draft EIS should be clearer that any and all applicable ROPs must be included in permits to drill. The current language provides that: Any applicant requesting authorization for an activity from the BLM will have to address the applicable ROPs in one of the following ways: ? Before submitting the application (e.g., performing and documenting subsistence consultation or surveys) ? As part of the application proposal (e.g., including in the proposal statements that the applicant will meet the objective of the ROP and how the applicant intends to achieve that objective) ? As a term imposed by the BLM in a permit228 This language implies that an operator could merely "address" ROPs in an application and not have the applicable requirements incorporated as legal requirements in a permit to drill that would be apparent in applicable NEPA review by the public and easily enforceable by the BLM. All ROPs must be incorporated into all relevant permits, just as all applicable lease stipulations must be incorporated into leases.	All ROPs will be incorporated into all relevant permits, just as all applicable lease stipulations must be incorporated into leases. See Section 2.2.5.
149.	Brook	Brisson	Trustees for Alaska	96981	77	Range of Alternatives	In order to rely on lease stipulations, BLM must set out narrowly prescribed waivers, exceptions and modifications to lease stipulations that are based on very specific criteria; having no sideboards, as the draft EIS currently proposes is not acceptable. Additional conditions governing waivers, exceptions and modifications that we	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
149. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	propose include: ? Overall, one-time exceptions should be the preferred approach where relief is sought from protective stipulations, such that the safeguards prescribed in the stipulations will remain in place for the majority of oil and gas leases. If the BLM determines that a waiver or modification is more appropriate for any stipulation, the reasons for such decisions will be documented. ? Waivers, exceptions and modifications should only be granted from no surface occupancy (NSO) stipulations after a 30-day public notice and comment period. ? The U.S. Fish and Wildlife Service should have the opportunity to submit information for consideration prior to granting waivers, exceptions, or modifications to address its expertise, surface management obligations, and potential impacts on any listed species. ? Finally, it is critical that BLM track waivers, exceptions, and modifications requested and those granted, and make that information available to the public on a quarterly basis. These records will provide important insight into how the stipulations are being applied and the potential impact of waivers, exceptions, and modifications on the overall function of the EIS. This information will also allow BLM to determine if the availability of or criteria for granting waivers, exceptions and modifications needs to be further narrowed in order to ensure sufficient protection for affected species. ? ROPs should not be subject to waiver, exception, or modification and justification should be provided as to the use of any reason that an ROP would not apply.	the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
150.	Brook	Brisson	Trustees for Alaska	96981	107	Range of Alternatives	BLM's proposed mitigation measures in the required operating procedures and lease stipulations are also insufficient to address impacts to permafrost and soils. Outside of the very limited provisions that relate to off-road travel, the reader is left with effectively no indication what measures BLM will implement to prevent or mitigate against the full range of potential impacts to soil and permafrost resources. ROP 11 indicates ground operations would be allowed when soil temperatures at 12 inches below the tundra surface reach 23 degrees Fahrenheit and snow depths are an average of 9 inches, or 3 inches of snow water equivalent, whichever is less. The strong winds, varied topography, and variable snow depths on the Coastal Plain are likely to make it difficult for find routes with consistent or adequate snow cover to prevent impacts from activities like seismic exploration. Assuming those parameters are adequate to prevent any possibly significant harm, they cannot do that if only an average snow depth is used to determine when ground operations will be allowed. "Generally, low amounts of winter snowfall, strong winter winds, and the hilly terrain in the 1002 Area combine to create substantial areas of very thin and unpredictable snow."793 Thus, even when snow depth was at its greatest recorded extent, in 2018, "vast areas of [the Coastal Plain] were snow free."794 Nor does ROP 11 even explain how and where these measurements will be taken, and how often. Snow coverage can change throughout the season, even overnight.	ROP 11's objective was developed to mitigate against impacts on soils and permafrost. If the resources experience impacts to the point where the objective can no longer be met, then the BLM can proactively initiate the waiver, exception, or modification process to modify the ROP. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
151.	Brook	Brisson	Trustees for Alaska	96981	108	Range of Alternatives	ROP 11 also doesn't adequately account for different vegetation types with these default depths. Allowing ground operation at an average of 9 inches of snow depth puts vulnerable tussock tundra habitat at risk of damage.795 Some tussock vegetation stands 18 inches tall when measured from the adjacent ground surface. If snow depth is insufficient to cover the tops of the tallest tussock vegetation, tussock vegetation may be crushed or sheared off during operations. Tussock vegetation that is crushed or sheared off dies, often replaced by different vegetation. This process can take 5 or more years, leaving the ground surface vulnerable to subsidence caused by a change in surface albedo, hydrology, and evapotranspiration. BLM needs to ensure snow depths cover the tops of the tallest tussock vegetation at sufficient depths. Similarly, shrubby vegetation is vulnerable to damage when not fully covered by snow. Ground operation should not be allowed in areas with shrubby vegetation unless snow depths are sufficient to cover the tops of shrubby vegetation. Ground operation will not be permitted on steep slopes with shrubby vegetation.	The standard used in Alternatives B and C are used by ADNR. The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

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152.	Brook	Brisson	Trustees for Alaska	96981	110	Range of Alternatives	ROP 11 includes a provisions stating that "[i]ce roads would be designed and located to avoid the most sensitive and easily damaged tundra types as much as practicable." BLM should delete "as much as practicable" from this provision. Sensitive and easily damaged tundra is often located along stream banks where shrubby vegetation is common. Allowing ice road construction across shrubby stream bank vegetation for practicability risks damaging and/or killing vegetation in a location where soils are especially vulnerable to subsidence and erosion. It may not be "practicable" to avoid such vegetation at stream crossings, thus risking irreversible erosion and subsidence that could have long-term impacts on water quality.	Avoidance of sensitive resources will be part of the project design. The Authorized Officer will review and approve on a project-specific basis. Site-specific actions will be analyzed under separate NEPA. However, in some cases, it may not be practical to avoid sensitive resources.
153.	Brook	Brisson	Trustees for Alaska	96981	111	Range of Alternatives	Standard g in ROP 11 indicates snow fences may be used in areas of low snow to increase snow depths within an ice road or snow trail route. Snow fences are an effective means to accumulate snow for the purpose of building snow roads, but snow accumulation may cause significant changes to surface hydrology, permafrost thermal stability, and to vegetation communities. Snow accumulation behind snow fences delays the melt period by 1-3 weeks and sometimes 4_8 weeks, ⁷⁹⁸ causing changes to soil temperature, soil moisture, nutrient cycling, and vegetation communities. Subsidence has been documented as well. ⁷⁹⁹ BLM should modify ROP 11 so snow fences must be removed immediately following construction of a snow road. Excess snow accumulated by snow fences must be excavated or pushed to decrease snow depths to that found in surrounding tundra.	The BLM has modified text in ROP 11. Snow fences would be maintained during operation of the road to maintain integrity of the road if necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
154.	Brook	Brisson	Trustees for Alaska	96981	124	Range of Alternatives	BLM appears to rely on its characterization of gravel mines as being outside of the 2,000-acre surface facility limit in order to avoid fully analyzing the impacts of mining on the surface resources of the Coastal Plain. BLM needs to fully account for the total number of acres that could be directly and indirectly impacted from gravel mining used to support the oil and gas program as part of the 2,000 acres. ⁸³⁶ The EIS characterizes gravel mines as equivalent to a mill that supplies steel for construction of other materials. ⁸³⁷ This makes no sense. Gravel mines will be used to supply the gravel that is directly used to build the roads and pads for any oil and gas developments, and are therefore integrally related support facilities.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.
155.	Brook	Brisson	Trustees for Alaska	96981	127	Range of Alternatives	Despite recognizing that these impacts exist to areas surrounding gravel mines, BLM makes no attempt to quantify that disturbance. BLM only acknowledges the direct footprint of mining itself as being between approximately 308-315 acres, ⁸⁴⁵ but does not quantify or even discuss the indirect and far broader range of impacts to the sensitive ecosystems surrounding these mines. Additionally, BLM notes that multiple material sources are expected to be used, but does not analyze impacts from multiple gravel mines, which would have a much greater impact on the Coastal Plain than a single mine.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

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156.	Brook	Brisson	Trustees for Alaska	96981	129	Range of Alternatives	BLM must explain how allowing gravel mining in streams would be subject to stipulations. Lease Stipulation 1 contained in the draft EIS, which is meant to protect water quality, purports to restrict "permanent oil and gas facilities" within certain setbacks,848 but BLM has arbitrarily and improperly defined gravel mines as being outside of the definition of oil and gas facilities, so it does not appear that this stipulation would apply to limit gravel mining in NSO areas and river corridors. Though it would seem gravel mining should be considered a "major construction activity" under Lease Stipulation 7,849 BLM's failure to discuss this or any other stipulation in its analysis for gravel mining in Chapter 3 raises doubt that it would apply. BLM must clarify which, if any, lease stipulations apply to gravel mining, and formulate new and additional protections that are expressly applicable to gravel mining activities on the Coastal Plain.	Gravel mines are now considered in the 2,000-acre limit. Accordingly, they have been added to applicable lease stipulations. The BLM has defined the terms "permanent oil and gas facilities" and "major construction activity" in the glossary.
157.	Karimah	Schoenhut	Sierra Club	97751	7	Range of Alternatives	The DEIS explicitly states that BLM considers the no action alternative to be one that it cannot lawfully adopt, and that it is presenting it only for the purposes of a basis of comparison. Yet BLM has totally failed to consider any other alternatives that would be consistent with providing a benefit to polar bears, or even maintaining the level of benefits provided by the current management plan for the Refuge. BLM has also totally failed to consider any alternative that would avoid additive cumulative effects that become "problematic" for the species. 5 All of the action alternatives it contemplates would have that effect, and yet the DEIS does not even attempt to address whether there are possible action alternatives that could avoid "problematic" consequences for the species.	The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA. Lease stipulations and ROPs are designed for resource protection, including polar bears. In addition, ESA and MMPA consultation would occur prior to any on-the-ground activity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
158.	Karimah	Schoenhut	Sierra Club	97751	9	Range of Alternatives	The DE IS fails to consider any alternative that would defer emissions by delaying production on leases. Nor does it consider any alternatives that would require lessees to provide compensatory mitigation via carbon offsets. This failure violates NEPA's procedural requirement to evaluate alternatives.	Operators are required to explore and develop the oil and gas resources of leased areas per 43 CFR 3130. Alternatives that were not analyzed in detail are included in Section 2.3.
159.	Anon	M	—	97937	5	Range of Alternatives	create leasing options of smaller acreage, closer to the 400,000 mandated.	Alternative D2 has been modified to offer 800,000 acres for leasing.
160.	Christy	Stebbins	—	97980	2	Range of Alternatives	The DEIS gives no reason why it is offering 66 to 100 percent of the 1.56 million-acre Coastal Plain for leasing purposes in the action alternatives, when Congressional direction only stipulated "at least" 400,000 acres be offered-just 25 percent of the total program area.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
161.	Katherine	Trisolini	—	98002	1	Range of Alternatives	Although the discussion of alternatives is considered to be the heart of the NEPA process, the Bureau has failed to include an alternative that minimizes impacts. Congress directed the agency to develop a leasing program with a minimum of 400,000 acres area-wide offered in each lease sale and a maximum of 2000 surface acres to be covered by production and support facilities. [TITLE II SEC. 20001 (C) 1 (B)i (The Secretary shall offer for lease under the oil and gas program under this section- (I) not fewer than 400,000 acres area-wide in each lease sale"); CID ii (3) ("SURFACE DEVELOPMENT.-In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section."))] Instead of considering alternatives with a lower total acreage offered in lease sales, the agency proposes to offer much more land than necessary, significantly exceeding the minimum directed by Congress. Meanwhile, the EIS reviews only alternatives that use (and in fact exceed) the maximum surface acreage coverage.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
162.	Katherine	Trisolini	—	98002	2	Range of Alternatives	As the DEIS explains, the no action alternative was included for comparison purposes only because it would not meet Congress' mandate to develop a leasing program, leaving on alternatives B, C, and D as possible options. Yet among these three the agency does not include an option that reduces impacts by offering the minimum area of this pristine land for lease consistent with PL 115-97, a particularly important approach in this case because the no action alternative cannot be selected. Alternatives B and C both offer the entire project area for leasing, a total of 1,563,500 acres, vastly exceeding the minimum land area that Congress directed the agency to include. While Alternative D reduces the total area offered, it still significantly exceeds the minimum acreage required by Congress, offering 1,037,200 acres for lease. At most, Congress required the agency to open 800,000 acres. Given that the leasing program is designed to operate in two phases, areas not leased in the first offering could be included in the 400,000 minimum for the second stage, thus making the mandated area even smaller. By examining and potentially adopting a program that offers no more acreage than necessary, the Bureau could drastically reduce environmental impacts while meeting the purpose of the law. Because the DEIS fails to include such an option, it does not provide a "reasonable range of alternatives" as required by NEPA.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
163.	Katherine	Trisolini	—	98002	14	Range of Alternatives	The Bureau must provide minimum requirements now that cannot be waived and should describe specific standards for the exercise of future discretion to change lease requirements. Otherwise, many of these conditions could be waived for individual leases, creating cumulative impacts that were not anticipated in this DEIS. These standards and uncertain options leave too much guesswork.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
164.	Pamela	Miller	—	98116	5	Range of Alternatives	Operating procedures that aren't leasing stipulations would not be within a lease. But even if they are within a lease, the EIS says they can be waived. It does not provide any kind of meaningful criteria about how they could -- by what provisions they could be waived, accepted or exempted, all of which are ways to say that -- that there would -- could be occupancy. Furthermore, the occupancy only applies to certain permanent facilities. It does not appear to apply to gravel mines. It does not apply to water reservoirs that might be dug in rivers. It does not apply to 3-D seismic activities, winter exploratory drilling or even summer exploratory drilling. If they did that without it being a -- well, it's unclear for exploratory drilling. No surface occupancy doesn't affect the ability for airplanes and helicopters to land and take off, and there are no timing restrictions for exploratory drilling operations, geophysical seismic -- geomagnetic operations involving low level aircraft flights or other things that may take place even in caribou calving grounds, much less the post-calving grounds.	Gravel mines are now considered part of the 2,000-acre facility limit. Accordingly, they have been added to applicable lease stipulations.
165.	Valanne	Glooschenko	—	98147	2	Range of Alternatives	The draft EIS is deficient in many respects, particularly the draft EIS continues four action alternatives for leasing and drilling, but none of these alternatives minimizes the area to be leased.	Alternative D2 has been modified to offer 800,000 acres for leasing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
166.	Brook	Brisson	Trustees for Alaska	98269	2	Range of Alternatives	On the one hand, BLM asserts for purposes of Alternative D that it would close 476,600 acres of caribou calving habitat to lease sales, but would still allow seismic activity over the entire program area. 270 First, BLM should not allow seismic activities in areas that are not subject to leasing. Areas that are off limits for purposes of leasing should also be off limits for purposes of seismic exploration.	Development of this EIS is specific to implementing the oil and gas leasing program, and decisions resulting from this EIS would be limited to a lease sale. Seismic exploration can be done absent a lease (a lease is not required). Even if areas are not available for lease, companies may conduct seismic exploration there. Separate NEPA analysis would be completed for all seismic exploration applications, which would analyze the site-specific impacts.
167.	Brook	Brisson	Trustees for Alaska	98269	69	Range of Alternatives	The DEIS does not discuss any means to ensure that oil and gas infrastructure development is consolidated and avoids duplicative or unnecessary infrastructure such as excessive gravel road mileage through lack of coordination among fields, multiple CPFs owned by different companies, etc. When unnecessary infrastructure is built through lack of planning and oversight by BLM, the infrastructure footprint is not minimized and environmental impacts are greater than they would otherwise be. The DEIS states that "operators would enter agreements to share road and pipeline infrastructure, where feasible," 473 but offers no mechanism to ensure that sharing occurs, e.g., through required coordination of development plans by multiple operators. BLM should ensure there is an administrative means that minimizes the overall footprint of the infrastructure beyond relying only on the 2,000 acre limit.	ROP 21 requires the minimization of the development footprint, including collocation and facility sharing where appropriate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
168.	Brook	Brisson	Trustees for Alaska	98269	70	Range of Alternatives	Because multi-phase (i.e., oil, gas and produced water) pipelines are not well-regulated either by the federal government or by the state, there is a need for a new ROP addressing pipeline safety for these lines. Releases from multi-phase lines in remote, sensitive parts of the Arctic Refuge would be particularly damaging to the environment as compared to spills that have been analyzed near Prudhoe Bay infrastructure. BLM should include an ROP that requires annual smart-pigging (i.e., inline inspection) of multi-phase pipelines to detect wall thinning and reduce the likelihood of releases. Moreover, BLM should ensure that a ROP for pipelines includes specifics on the performance capabilities of leak detection systems and the required locations of shut-off valves to prevent sizeable releases into surface waters.	The level of specificity for pipeline capabilities would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
169.	Brook	Brisson	Trustees for Alaska	98269	71	Range of Alternatives	Additionally, BLM should include an ROP that requires staging of emergency response equipment at key locations on the Coastal Plain to allow responders to rapidly address oil pipeline spills, including for pipelines that do not have roads that parallel them.	At the time of a site-specific proposal, the operator will be required to submit a spill response plan based on the statutes, regulations, and guidelines of the EPA, ADEC, and the Alaska Oil and Gas Conservation Commission, as well as policy guidelines of the BLM. This plan would include information on the staging of emergency response equipment as it relates to the site-specific proposal.
170.	Brook	Brisson	Trustees for Alaska	98269	74	Range of Alternatives	BLM needs to work with USGS' seismic experts to review aftershock and other more recent data compiled since August 2018 and reassess the likelihood of seismic risk in the region. That reassessment should occur now, to inform this EIS. BLM then must ensure, through ROPs, that all oil and gas infrastructure is designed and constructed to address that risk.	Future oil and gas development would be required to comply with state and federal safety standards, including applicable seismic design requirements. Section 3.2.5, Geology and Minerals, reflects current information regarding earthquakes in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
171.	Brook	Brisson	Trustees for Alaska	98269	85	Range of Alternatives	BLM should also remove the provision that allows it to grant exceptions to any reclamation requirements. The circumstances under which BLM could potentially waive this requirement are unclear in the EIS and appear to completely negate the meaningfulness of any reclamation requirements. There is no circumstance under which BLM should be able to grant exceptions to these reclamation requirements.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
172.	Brook	Brisson	Trustees for Alaska	98269	87	Range of Alternatives	BLM should require that permafrost core samples be taken at a site at sufficient intervals to calculate the volume of massive and pore ice in the underlying permafrost. Seeding with grass is unacceptable; entities should use locally collected seeds of forbs and sedges or sprig with willows. BLM also needs to account for and provide a long-term plan that addresses where gravel would be placed after field closure, particularly in light of concerns about contamination.	The site-specific NEPA analysis and authorization would include a reclamation plan, which would include revegetation (see ROP 35).
173.	Brook	Brisson	Trustees for Alaska	98269	90	Range of Alternatives	BLM needs to include clear standards that companies will need to meet to ensure areas are fully restored. The cursory statements BLM included in ROP 35 are unobtainable and too vague to give any indication of where and how areas will be restored, over what timeframe, and to what standards. These standards need to be specific, measurable, achievable, reasonable, and time-bound. (Regardless, ROP 35 should be extended to require a bond to cover abandonment.)	Bonding requirements are specific to leases; these will be dealt with during site-specific authorizations. The specificity of a reclamation plan would be developed after site-specific project impacts have been identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
174.	Brook	Brisson	Trustees for Alaska	98269	91	Range of Alternatives	To justify relying on reclamation as lessening environmental impacts in a NEPA document, BLM needs to incorporate standards into the lease terms to ensure there are clear, achievable obligations for companies to undertake restoration of any impacted areas. BLM should incorporate far more detailed criteria related to restoration standards, including information on the timing of implementation, monitoring methods that will be used to determine success, how any contamination issues will need to be addressed, how companies will restore adjacent areas that have been impacted by dust or other contaminants, and more. BLM's statement that areas would be restored to ensure "eventual" restoration and meet "minimal standards" to restore wilderness provides little assurance that these areas will ever be restored to a level that returns them to anything close to their original condition or functions, or that ensures companies will actually be required to meet any objective, clear standards.	Under all alternatives, ROP 35 requires a plan that will achieve restoration to the land's previous hydrological, vegetation, and habitat condition.
175.	Brook	Brisson	Trustees for Alaska	98269	92	Range of Alternatives	In addition to incorporating more stringent standards and clear obligations for reclamation in the leases, BLM should include formal criteria governing the financial assurances necessary to ensure sufficient funding for restoration and reclamation. BLM should mandate bonding at the time it issues the leases.	Oil and gas leasing regulations (43 CFR 3104) require that the operator on the ground shall be covered by a bond prior to commencement of surface-disturbing activities related to drilling operations on a federal oil and gas lease (see Section 3.5 of the Draft EIS).

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176.	Brook	Brisson	Trustees for Alaska	98269	96	Range of Alternatives	BLM also needs to modify ROP 24d. It currently has no gravel mine reclamation specifications. Gravel mine reclamation and associated land rehabilitation can be particularly difficult. Many mines on the North Slope are reclaimed by turning the former pit into deep water fish habitat. Not only does this result in a rather unnatural-looking square lake, but offers little in the way of replacing the habitat loss displaced by the mine. Gravel mines are one of the few available sources of tundra sod. ...Tundra sod must be cut and preserved using the most current techniques and should be reused on tundra rehabilitation sites.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
177.	Brook	Brisson	Trustees for Alaska	98269	140	Range of Alternatives	Baseline levels of air quality must be established prior to allowing development on the Coastal Plain. In the absence of a baseline monitoring data record that is representative of ambient air conditions on the Coastal Plain, BLM should ensure that quality-assured monitoring data are collected within the program area in accordance with EPA and State data quality criteria and that the data are made available to the public, prior to allowing development on the Coastal Plain. ⁷²⁴ Establishment of a comprehensive monitoring network within the program area will help serve as a backstop to track and ensure air quality protection throughout the Coastal Plain and to help identify areas of concern with regard to air impacts.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
178.	Brook	Brisson	Trustees for Alaska	98269	141	Range of Alternatives	The DEIS fails to analyze or condition leasing on a comprehensive set of required, measurable, and enforceable mitigations to ensure there will be no significant impacts to air quality associated with leasing and development of the Coastal Plain. ⁷²⁵ BLM's failure to include specific, enforceable mitigation measures makes it unclear how the agency will ensure there will be no significant impacts to air quality - i.e., that development will not adversely impact human health and the natural environment and will not result in significant deterioration of air quality as required by the Clean Air Act. None of the Lease Stipulations address air quality, and the BLM's Required Operating Procedures 5 and 6 do not adequately address air quality and are largely discretionary. Monitoring does not mitigate against impacts to air quality, and BLM should not conflate these requirements.	ROPs 5 and 6 are the baseline standards. Additional mitigation measures would be applied during the project-level phase as appropriate.
179.	Brook	Brisson	Trustees for Alaska	98269	142	Range of Alternatives	The failure to analyze sufficient mitigation measures also violates NEPA, which requires BLM to consider reasonable alternatives to eliminate or mitigate adverse impacts to air quality. As BLM expressly acknowledges, the potential impacts to air quality under all of the action alternatives would be identical - demonstrating that the range of alternatives is insufficient. ⁷²⁷	The fact that impacts to a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.

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180.	Brook	Brisson	Trustees for Alaska	98269	143	Range of Alternatives	BLM must put forth an alternative that ensures no significant air quality impacts and full compliance with the Clean Air Act. This would include one that fully considers whether there will be unacceptable health risks associated with criteria and hazardous air pollutant impacts, significant cumulative visibility impacts, or significant deterioration of air quality. BLM should use modeling to determine what specific mitigation measures and pace / location / intensity of development will be needed to ensure BLM's actions will not cause or contribute to violations of the National Ambient Air Quality Standards or adverse impacts to air quality related values, and then BLM must include those measures as enforceable mitigation measures in the DEIS.	ROPs 5 and 6 provide protections at the leasing stage for air quality. Any future actions or activities are required to comply with CAA and meet NAAQS. Modeling of air quality impacts at a leasing phase is highly speculative due to the lack of specificity of what, where, and when development may occur.

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181.	Brook	Brisson	Trustees for Alaska	98270	1	Range of Alternatives	ROP 10 also requires a sound source verification test in advance of seismic survey work to measure the distance of vibroseis3 sound levels through grounded ice to the 120 decibels (dB) re 1 ?Pa threshold in open water. The distance will be used to buffer all on-ice seismic survey activity operations from any open water or ungrounded ice throughout the project area.1586 BLM fails to explain the basis for the 120 dB threshold. Its apparent premise - that staying below this threshold will avoid impacts to seals - does not appear to be supported by the best available science. Instead, contextual factors such as subject behavioral state, spatial orientation of source and receiver, subject motivation or familiarity with a sound source, and similarity of noise to potential predators strongly influence response probability across a range of noise levels.1587 BLM must consider the contextual factors relevant for ringed seals near the coastal plain, including the likely unfamiliarity with industrial noise sources, and must explain the basis for establishing a 120 dB threshold.	The BLM has edited text in Chapter 2 for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
182.	Brook	Brisson	Trustees for Alaska	98271	21	Range of Alternatives	Additionally, the lease stipulations do not protect water resources from over withdrawal. Lease Stipulation 1 protects water quality, not water quantity. Lease Stipulation 2 purports to protect water quantity, but because its requirements are the same as ROP 9, they are insufficient for the reasons described below. Also, both Lease Stipulation 2 and 3 are limited in the geographic area or specific resources that they would apply to. This leaves much of the water resources on the Coastal Plain without protections. Lease Stipulation 9 is aimed at protecting coastal areas. While this will protect some aspects of water resources of the Coastal Plain, it does not ensure protection of water quantity or limit water withdrawals. BLM must consider lease stipulations to protect water quantity.	ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
183.	Brook	Brisson	Trustees for Alaska	98271	22	Range of Alternatives	BLM also states that required operating procedures 3, 4, 9, 10, 12, 13, 17, 20, 24, and 26 would minimize impacts to water resources. ⁸⁸⁷ These measures are inadequate to protect water quantity from the impacts of water withdrawals for oil and gas activities. ROP 3 is aimed at water quality, not quantity. ROPs 4 and 10 are for polar bears and do not address water resources. ROP 9 allows water withdrawals of a percentage of unfrozen or available water based on fish species, but BLM does not explain or justify how it arrived at the percentages. ⁸⁸⁸ Without that critical information, it is unclear if the ROP will in fact protect water resources generally and water quantity in particular. It also makes modeling and monitoring completely discretionary, further limiting BLM's ability to understand the impacts of water use and regulate it effectively. ROP 12 protects water drainage patterns by limiting how components are	Lease stipulations and ROPs designed to protect non-water resources may also provide protections for water resources. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
183. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	constructed but does not otherwise protect water quantity or ensure there will not be adverse impacts from water withdrawals. ROP 13 addresses fish and aquatic habitat, but not water quantity. ROP 17 prohibits the construction of a gravel road for exploratory drilling. While this should be required, we also note that that means that ice or snow roads will be used, which will lead to impacts on water resources, not lessen them. This ROP, therefore, does not provide protections for water quantity. ROP 20 is geared at maintaining fish passage by prohibiting development in various areas and habitats. This does not ensure that sufficient water quantity will be available in rivers and streams sufficient for fish passage. ROP 24 concerns the location of gravel mines to protect various resources, but again, it does not directly ensure protection of water quantity. ROP 26 concerns birds and is unrelated to water resources.	(see above)
184.	Brook	Brisson	Trustees for Alaska	98271	42	Range of Alternatives	BLM must precisely describe relevant terms and the scientific methodologies for implementing each LS/ROP. The following terms in LS 1, 2, 3, 4 and ROP 8, 12, 16, 19, 20, 22 are not adequately or scientifically defined for each river or stream where LS or ROPs apply: > Active floodplain > Floodplain > River delta > 50, 100, 200 year flood for CP rivers > Ordinary high-water mark > Essential pipeline/road crossings > Natural flow of rivers > Disrupt flow from perennial springs > Free passage for anadromous fish > Maintain natural runoff processes	These terms apply generally to all rivers and streams. Terms requiring further definition have been added to the glossary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
185.	Brook	Brisson	Trustees for Alaska	98271	43	Range of Alternatives	Lease stipulations and ROPs do not meet objectives with allowable exceptions in alternatives B, C, D. If exceptions within the following LS and ROPs are implemented, the action of the exception will negate the overall objective of the ROP because there are no defined limits associated with each exception action. 1. Lease stipulation 1: No defined parameters associated with the allowable exception to building pipelines, roads or facilities in river deltas. Permeant pipelines, roads or industrial facilities within the flood plain will negate the objective of the LS. 2. Lease stipulation 3: The requirement/standard is not possible and will be ineffective since karst spring source water has a long residence time and short-term studies will not ensure drilling would not disrupt perennial springs. 3. Required operating procedure 8: No defined parameters associated with the allowable exception to remove ice from rivers. Due to no limit on river ice extraction, the ROP's exception negates the objective. Without first defining terminology and then conducting long term hydrologic monitoring, is not possible to quantify whether the objective can be met. 4. Required operating procedure 9: Optional water level and quality monitoring does not allow for adequate or scientific assessment of impacts. 5. Required operating procedure 11: No defined limitations on the surfaces on which roads and industrial operations can operate. Terrain with high erosion potential due to slope and surficial geology is necessary to include within the ROP or objective will not be met. 6. Required operating procedure 12: Requirement/standard described will not necessarily meet the ROP objective. The listed procedures only	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. Any future actions or

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
185. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	provide some necessary protective measures and do not cover the suite of crossing structure impacts. Need to also require annual at-site monitoring or there will be no way to determine impacts. 7. Required operating procedure 16: No defined parameters associated with the allowable exception of BLM authorized drilling in floodplains of fish-bearing rivers and streams will negate the ROP objective. Drilling will change water quality due to the quantity of water required for drilling and discharged water. 8. Required operating procedure 19: No scientific evidence documented in the DEIS to support adequacy of 500ft buffer to meet its objective. 9. Required operating procedure 20: Appropriate entities not defined (e.g., USWFS, NMFS) and expertise not defined. Lack of clarity on the ROP could negate the ROP from meeting its objective. 10. Required operating procedure 22: No defined parameters associated with the culvert installation potentially void ROP objective. Terms within the DEIS such as "necessary", "smaller streams", "fish", "restricting fish passage", "natural flow" and "adversely affecting natural flow" need to be defined and detailed methodology needs to be described. Stream crossing methods are out of date (20+years old) and new information on impacts of culverts on fish and aquatic species needs to be considered (e.g., Maitland et al. 2016). 11. Required operating procedure 28: Lacustrine and riverine geomorphic and ecological classification need to be included in the ROP in order to identify and protect important habitat for aquatic invertebrates and all fish species.	activities are required to receive the appropriate authorizations. Additional project-specific requirements to meet objectives cannot be identified until site-specific development activities are proposed. The 500-foot buffer identified in ROP 19 is standard practice on state and federal lands in Alaska for the past 30 years. Text has been added to ROP 20. Stream crossing methods in ROP 22 are specific to the Arctic environment and utilize current relevant data. Bridge and culvert design will be analyzed through project-specific NEPA analysis.

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186.	Brook	Brisson	Trustees for Alaska	98271	44	Range of Alternatives	The DEIS fails to include any scientifically justified rationale, backed by empirical data, to explain the proposed width of stream buffers. Within the DEIS there are major scientific data gaps revolving around the width of stream buffers, and extensive scientific evidence needs to be provided to described why values where chosen and why certain rivers and streams were not included. To adequately support its stream buffers, BLM must provide peer-reviewed scientific evidence to demonstrate the following: > How was river buffer width determined and what scientific evidence was used to determine appropriate width to meet lease stipulation objective? ? Why do certain rivers not have buffers and what scientific evidence was used to determine river buffer width necessary to meet lease stipulation objectives? ? Why do all lower order streams not have a buffer and what scientific evidence was used to determine the appropriateness of this decision? > Does the lack of stream buffers on lower order streams negate protective objectives of higher order streams due to the fact that they are connected hydrologically? > How was aufeis/karst spring buffer width determined and what scientific evidence was used to determine appropriate width to meet objective? > What is the state of science around aufeis flow paths, habitat use of fish and invertebrates across seasons? In short, BLM's proposed lease stipulations and ROPs appear arbitrary, lack scientific support and necessary detail, and will likely be ineffective in preventing or mitigating adverse impacts to fish and aquatic species.⁸⁹⁸	Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources in those areas. The widths vary among the alternatives to facilitate analysis of the different management options. See Sections 3.2.10 and 3.3.2 for discussions of aufeis and fish and invertebrate habitat use.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
187.	Brook	Brisson	Trustees for Alaska	98271	90	Range of Alternatives	The stipulations for protecting cliff-nesting raptors are arbitrary, insufficiently analyzed, and unlikely to achieve the intended result. The DEIS notes that raptors are more easily disturbed by human activities than other birds, concluding that “falcons, hawks, and eagles . . . reacted at greater distances [than 656 feet].”⁹⁸³ But the DEIS does not contain a mitigation measure that directly addresses impacts to cliff-nesting raptors from human disturbance. Lease Stipulation 1 comes closest and includes the objective to “[m]inimize the loss of raptor habitat” by limiting infrastructure along rivers within 2, 1, or 0.5 miles of various rivers in the project area.⁹⁸⁴ But the DEIS only describes the buffer for raptors as more than 656 feet, without providing more specific information. It is therefore impossible to analyze whether these distances are adequate to protect cliff-nesting habitat or to protect raptors from disturbance without a clearer understanding of the buffer distance these raptors need. Furthermore, the exceptions to Lease Stipulation 1 will swallow the rule, as pipelines and roads are allowed on a case-by-case basis.⁹⁸⁵	Lease stipulations and ROPs designed to protect one resource may also provide protections for additional resources. Lease Stipulations 4 and 9, and ROPs 25, 30, and 31 provide protections for cliff-nesting raptors. Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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188.	Brook	Brisson	Trustees for Alaska	98271	91	Range of Alternatives	An ROP intended to protect cliff-nesting raptors from gravel mining is arbitrary and lacks adequate explanation. ROP 30 has the objective to "[p]revent or minimize the loss of nesting habitat for cliff-nesting raptors" by prohibiting the removal of "greater than 100 cubic yards of bedrock outcrops, sand, or gravel from cliffs displaying evidence of raptor nests." ⁹⁸⁶ This differs slightly from a similar mitigation measure in the 2013 IAP for the NPRA, which holds that "Removal of greater than 100 cubic yards of bedrock outcrops, sand, and/or gravel from cliffs shall be prohibited" ⁹⁸⁷ without requiring evidence of nesting. The ROP does not explain how operators would determine whether there is evidence of raptors, or whether a trained biologist would be necessary to make such a determination. This ROP also runs afoul of the buffer mentioned elsewhere in the DEIS, ⁹⁸⁸ given that approaching the cliffs to assess gravel resources could disturb raptors.	The BLM has edited text in Chapter 2 for clarity.
189.	Brook	Brisson	Trustees for Alaska	98271	92	Range of Alternatives	ROP 30 further requires a "hydrological study that indicates no potential impact on the integrity of river bluffs" prior to "extraction of sand or gravel from an active river or stream channel," ⁹⁸⁹ but does not explain whether this activity would itself disturb nesting raptors. The agency apparently designed ROP 30 to protect cliff-nesting raptors but this ROP will risk causing disturbance and does not provide enough evidence that it will limit the destruction of nesting habitat.	The ROP objective is to protect against the loss of nesting habitat for cliff-nesting raptors; it does not address disturbance of individual birds.

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190.	Brook	Brisson	Trustees for Alaska	98271	93	Range of Alternatives	The ROP designed to mitigate aircraft disturbance to raptors similarly does not explain how operators will identify raptor nests. ROP 34 requires aircraft to maintain at least 1,500 feet altitude when within half a mile of identified raptor nesting sites. But neither the ROP nor analysis elsewhere in the DEIS explain how crews or operators will identify raptor nests, nor whether a trained biologist is needed to properly identify sites	ROP 34 (section a) discusses aircraft use plans that would be submitted. It is not up to the aircraft operator to identify raptor nests. During the APD, a flight plan would be submitted containing the number of proposed flights. The associated NEPA analysis would identify areas requiring protections related to raptor nests.
191.	Brook	Brisson	Trustees for Alaska	98271	99	Range of Alternatives	The mitigation measures to address impacts to shorebirds in river deltas are inadequate and arbitrary. The DEIS notes that shorebirds in river deltas could be impacted from development. For example, when discussing road disturbance, the DEIS says "Fall migration-staging flocks may also be subject to disturbance and displacement, such as shorebirds in river deltas." ¹⁰⁰³ The DEIS then appears to rely on the lease stipulations riparian setbacks to address any impacts to shorebirds and other birds. ¹⁰⁰⁴ But these setbacks appear inadequate for protecting shorebirds. Lease Stipulation 1 applies generally to protecting wildlife habitat and prohibits roads and pipelines in riparian areas, but allows exceptions on a case-by-case basis. ¹⁰⁰⁵ Any rehabilitation of gravel infrastructure may be beneficial for waterbirds, ¹⁰⁰⁶ but these efforts are not likely to mitigate impacts to shorebirds. ¹⁰⁰⁷ The broad exception in Lease Stipulation 1 that would apply across the alternatives therefore belies the conclusions that the larger setbacks in Alternatives C and D make these options more protective. ¹⁰⁰⁸ The DEIS fails to analyze impacts to shorebirds in river deltas and the mitigation measure will not address these impacts.	The BLM has added text to Section 3.3.4 discussing impacts on shorebirds, including in river deltas.

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192.	Brook	Brisson	Trustees for Alaska	98271	103	Range of Alternatives	First, the DEIS does not explain where and when barging and screeding would occur. The DEIS notes that screeding (scrapping the seafloor) could impact waterbirds feeding in lagoons and coastal areas. ¹⁰¹⁹ The DEIS notes that these activities could occur in Camden Bay, ¹⁰²⁰ but does not limit barging and screeding to this one location. The DEIS offers a conclusory statement that "impacts from screeding are expected to be of short duration and would occur in localized areas." ¹⁰²¹	The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
193.	Brook	Brisson	Trustees for Alaska	98271	106	Range of Alternatives	The DEIS uses an arbitrary buffer zone as a way to protect eiders. The DEIS ascribes a buffer of 656 feet (about 200 meters) in order to "[a]void and reduce temporary impacts on productivity from disturbance near Steller's or spectacled eider nests." ¹⁰²⁵ The DEIS also appears to use this same buffer to analyze impacts to all bird species. ¹⁰²⁶ But the DEIS does not explain why this buffer is appropriate specifically for eiders, nor does the DEIS explain why this buffer is appropriate for all species.	A 656-foot (200-meter) buffer is the standard USFWS buffer distance for protection of various species, including eiders. Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts.

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194.	Brook	Brisson	Trustees for Alaska	98271	108	Range of Alternatives	The DEIS does not use complete and appropriate science to determine an appropriate buffer for eiders. The DEIS relies on Livezey et al. (2016) to support the idea that a buffer of 656 feet is appropriate for eiders and for all birds in the program area. But Livezey et al. (2016) is a compilation of data on the disturbance threshold for 49 species of nesting birds and 650 species of nonnesting birds. While this is one place to start the analysis on how disturbance could impact birds in the project area, it is not enough to rely on this compilation to apply specifically to eiders or even to all birds. First, it is not clear whether the data presented in Livezey et al. (2016) is applicable to Arctic birds; the agency should have used the database offered in this publication and conducted a new analysis using only Arctic species. Second, the DEIS additionally references disturbance studies on Arctic birds that indicate a zone of disturbance that is larger than 656 feet.¹⁰²⁷ The DEIS cites to Monda et al. (1994)¹⁰²⁸ which documented a buffer of 1640 feet for Tundra Swans; to Johnson et al. (2003) which documents a buffer of 4224 feet (0.8 miles) for unknown Arctic birds;¹⁰²⁹ and to Liebezeit et al. (2009)¹⁰³⁰ which documents a buffer of more than 16,000 feet (3.1 miles) for nesting Arctic passerines. But the DEIS does not explain why it arbitrarily chose 656 feet as the appropriate buffer for eiders and for all birds in the project area.	A 656-foot (200-meter) buffer is the standard USFWS buffer distance for protection of various species, including eiders. Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts.

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195.	Brook	Brisson	Trustees for Alaska	98271	111	Range of Alternatives	Moreover, the mitigation measures for seabirds are missing, inadequate, or arbitrary. Lease Stipulation 9 would purportedly protect coastal zones to varying degrees, but under Alternative B would only require a mitigation plan but would not actually prevent any infrastructure in the coastal area, and Alternatives C and D would allow for barges, docks, spill response areas, and pipelines. ¹⁰⁴¹ This stipulation would therefore not address impacts that occur on the vessel route from Dutch Harbor.	Lease stipulations and ROPs designed to protect one resource may also provide protections for different resources. The BLM does not have authority to regulate marine traffic outside the Coastal Plain. Impacts on seabirds associated with the marine vessel route are discussed in Section 3.3.3.
196.	Brook	Brisson	Trustees for Alaska	98271	172	Range of Alternatives	BLM needs to clearly specify where gravel mining will be allowed within or near the program area to allow evaluation of its impacts. It must then use that information in conjunction with the scientific evidence cited above to quantitatively evaluate the direct, indirect and cumulative impacts to caribou from gravel mining in or near the program area.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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197.	Brook	Brisson	Trustees for Alaska	98271	191	Range of Alternatives	Lease stipulation 3 - Springs/Aufeis This stipulation acknowledges that aufeis "provides insect relief for caribou."1331 Although the objective for Alternatives B and C states "[b]ecause the subsurface flow paths to perennial springs are unknown and could be disturbed by drilling or fracking, use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted,"1332 neither alternative considers no leasing in those areas. This only occurs under Alternative D. BLM should operate according to its own recommendation and likewise make spring/aufeis habitat for fish, caribou and other organisms associated with perennial springs unavailable for leasing under Alternatives B and C.	In addition to Lease Stipulation 3, Lease Stipulation 1 provides additional protection to springs and aufeis (i.e., NSO under Alternatives B and C). The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
198.	Brook	Brisson	Trustees for Alaska	98271	192	Range of Alternatives	b. Lease stipulation 4 - Nearshore marine, lagoon, and barrier island habitats The objective for this stipulation includes protection of caribou insect relief areas among its purposes.1333 The stipulation prohibits certain types of infrastructure in coastal waters, lagoons and barrier islands, but provides a caveat that infrastructure "necessary for oil and gas activities" may be approved.1334 No guidance is given for what conditions would be deemed "necessary," nor if there would be any limits placed on the amount or density of structures that could be approved by this process. This lack of certainty makes it unclear to what degree, if any, caribou coastal insect relief habitat will be protected over the long term. Restrictions need to be clearly specified and justified with the best-available scientific information.	Lease Stipulation 4 (section a) describes the infrastructure that may be necessary in nearshore areas. ROP 21 requires minimization of the development footprint. A project-specific NEPA analysis would be required for any development in the Coastal Plain and would be conducted by multiple agencies. Alternatives of a project-specific NEPA analysis would necessarily examine these potential means for reducing impacts on surface resources.

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199.	Brook	Brisson	Trustees for Alaska	98271	193	Range of Alternatives	Lease stipulation 4 - Nearshore marine, lagoon, and barrier island habitats Alternative D adds additional restrictions, including that - in coordination with prospective Refuge users or user groups - lessees, operators and contractors would "[d]esign and construct facilities to minimize impacts on subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources" and conduct daily operations in a way to "minimize impacts on...wildlife resources."1335 It is unclear (and not justified) why these provisions only apply to Alternative D. These are common-sense requirements that BLM should apply across all alternatives to reduce impacts to caribou, other wildlife, and subsistence and other users. Moreover, to ensure efficacy, the stipulation should include measurable standards to achieve the broad objective of minimizing impacts, supported by the best-available scientific information.	Other ROPs (e.g., ROPs 36 and 39) require facility siting and design to minimize impacts on subsistence activities under all alternatives.
200.	Brook	Brisson	Trustees for Alaska	98271	194	Range of Alternatives	c. Lease stipulation 6 - Caribou Summer Habitat We agree with the acknowledgement in this stipulation that "[a]ll lands in the Arctic Refuge Coastal Plain are recognized as habitat of the PCH and CAH and would be managed to ensure unhindered movement of caribou through the area."1336 Management to ensure unhindered movement is indeed an important goal to avoid negative consequences for caribou. Unfortunately, the stated objective of minimizing disturbance, hindrance and alteration of movement1337 is inconsistent with that important goal. We urge BLM to follow its own rationale stated in the note on this stipulation and to define the objective as ensuring unhindered movement of caribou through the Coastal Plain.	ROP 23 further addresses ways to minimize disruption of caribou movement and subsistence use through the Coastal Plain. The BLM has edited text of the note associated with Lease Stipulation 6 for clarity.

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201.	Brook	Brisson	Trustees for Alaska	98271	195	Range of Alternatives	Lease stipulation 6 - Caribou Summer Habitat It is important to note that due to the sensitivity to development of cows with young calves, as acknowledged in the DEIS,1338 it is likely impossible to ensure unhindered movement through developed areas. This reinforces the need for large areas sufficiently far away from infrastructure and activity where cows and calves are unlikely to be affected. BLM should demonstrate spatially and based on the best-available science where such areas will occur, taking into account that displacement effects from development will not stop at the boundary of an NSO or no leasing area.	ROP 23 further addresses ways to minimize disruption of caribou movement and subsistence use through the Coastal Plain. The BLM has edited text of the note associated with Lease Stipulation 6 for clarity.
202.	Brook	Brisson	Trustees for Alaska	98271	196	Range of Alternatives	Addition of timing limitations under Alternative D2 is important to improve protections to caribou and should be applied to the other alternatives. This addition states that timing limitations are intended "to restrict activities that would disturb caribou during calving and insect-relief periods."1339 Since the entire Coastal Plain may be used by caribou during calving and post-calving,1340 we urge that the description on page 2-12 be changed from: "If caribou arrive on the calving grounds before May 20..." to "If caribou arrive on the Coastal Plain before May 20..." This is necessary to ensure that the definition of "calving grounds" is not subject to interpretations that might reduce protections under the stipulation. Furthermore, as others have pointed out,1341 minimum requirements for the 'stop work plan' developed by the lessee should be specified in the DEIS to ensure plans will achieve their intended goal.	Text has been edited in Chapter 2 for clarity.

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203.	Brook	Brisson	Trustees for Alaska	98271	197	Range of Alternatives	Finally, the caveat in the timing limitation description that states, "unless approved by the BLM Authorized Officer," ¹³⁴² is highly problematic. As written, no guidelines are given for when approval might be allowed, beyond "in consultation with the appropriate federal, state, and NSB regulatory and resource agencies." ¹³⁴³ Absent measurable standards and specific guidelines for when approval might be granted (e.g., no caribou detected within 20 km of facilities by both telemetry data and aerial surveys and telemetry records from collared caribou do not show caribou heading in the general direction of the project area), this caveat should be removed. Whatever guidelines are presented must be clearly supported by the best-available scientific information.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is

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203. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. The BLM has added additional text to Table 2-3.
204.	Brook	Brisson	Trustees for Alaska	98271	198	Range of Alternatives	Lease stipulation 7 - PCH Primary Calving Habitat Area Moreover, areas outside of the most commonly used concentrated calving areas can still be very important for caribou in some years, as described above. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates. ¹³⁴⁵ This possibility would render the strict definition of primary calving habitat given in Stipulation 7 ineffective. Instead, BLM should recognize the clear array of historic records showing that the entire Coastal Plain is important for calving over longer timeframes and seek to avoid disturbance and hindrance of movement across the entire Coastal Plain.	The EIS contains multiple lease stipulations and ROPs that are designed to avoid caribou disturbance and hindrance of their movement across the entire Coastal Plain.

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205.	Brook	Brisson	Trustees for Alaska	98271	200	Range of Alternatives	Lease stipulation 7 - PCH Primary Calving Habitat Area The added traffic restrictions in Stipulation 7 include speed limits when caribou are within half a mile of the road.1346 Caribou can travel very quickly, covering half a mile in a matter of minutes.1347 It is thus important to extend this boundary and to use multiple monitoring methods to manage vehicle activities. These should include: 1) daily review of location data from collared caribou to examine general movement patterns long before caribou contact roads, 2) daily or alternate day aerial reconnaissance flights in buffer areas near roads to provide more detailed location information, including of non-collared individuals, 3) road-based surveys to detect caribou proximity to roads. Traffic alteration must be started early and increasingly restricted as caribou near roads.	Along with Lease Stipulation 7, ROP 23 is designed to minimize disturbance to caribou movement. Traffic in areas with calving caribou would be minimized or eliminated as possible through the vehicle use plan, which could include recommendations such as daily review of location data, aerial reconnaissance flights, or road-based surveys.

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206.	Brook	Brisson	Trustees for Alaska	98271	201	Range of Alternatives	Lease stipulation 7 - PCH Primary Calving Habitat Area Also, although BLM acknowledges that "15 vehicles per hour or more has been shown to deflect caribou movements and delay road crossings," ¹³⁴⁸ no limits on traffic volume are included her or in other stipulations and ROPs. BLM should conform to its own acknowledgement of impacts and restrict traffic below 15 vehicles per hour. Even these mitigation measures are unlikely to be ultimately effective, however, as the DEIS notes that "[s]ome level of displacement of calving caribou has been shown to occur even with low levels of traffic." ¹³⁴⁹ The high sensitivity of calving caribou to human disturbance and sustained shifts in CAH distribution away from development areas in spite of mitigation measures ¹³⁵⁰ indicate that the requirements specified in this stipulation are unlikely to remove disturbance and displacement of female caribou with young calves during calving.	Along with Lease Stipulation 7, ROP 23 is designed to minimize disturbance to caribou movement. Traffic in areas with calving caribou would be minimized or eliminated as possible through the vehicle use plan. Text has been added to Lease Stipulation 7.
207.	Brook	Brisson	Trustees for Alaska	98271	202	Range of Alternatives	Lease stipulation 7 - PCH Primary Calving Habitat Area Finally, while the stipulation states that "[t]he following ground and air traffic restrictions would apply," ¹³⁵¹ no air traffic restrictions are listed. These must be specified so that their utility can be evaluated.	Along with Lease Stipulation 7, ROP 23 is designed to minimize disturbance to caribou movement. Traffic in areas with calving caribou would be minimized or eliminated as possible through the vehicle use plan. Text has been added to Lease Stipulation 7.

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208.	Brook	Brisson	Trustees for Alaska	98271	203	Range of Alternatives	e. Lease stipulation 8 - PCH Post-Calving Habitat Area The note on Stipulation 8 defines the "PCH post-calving area" using the same guidelines used for the primary calving area in Stipulation 7.1352 This is again problematic and not supported in the DEIS with robust scientific justification. As is described above, the post-calving period is a crucial time for caribou when movement is critical to ensure access to sufficient forage while reducing the negative effects of insect harassment. Once again, areas outside of the most commonly used post-calving areas will still be important for caribou in some years. Thus, protections laid out in Stipulation 7 should be applied across the entire post-calving area - the full Coastal Plain - incorporating the recommendations we provided above.	Additional text has been added to Section 3.3.4 describing the definitions of the calving and post-calving habitat areas.
209.	Brook	Brisson	Trustees for Alaska	98271	204	Range of Alternatives	Lease stipulation 8 - PCH Post-Calving Habitat Area The concept of evacuating roads when attempted caribou crossings appear imminent is appropriate but details must be more clearly defined. For example, what qualifies as "appears to be imminent"?1353 Science-based guidance should be clearly stated. Also, what needs to be done for "evacuation"? Is this simply removing people and stopping vehicle movement or actually removing vehicles from the area? If the latter, how will vehicle removal be accomplished without further disturbing caribou?	Site-specific requirements such as these would be developed through a vehicle use management plan, as described in ROP 23 (section g).
210.	Brook	Brisson	Trustees for Alaska	98271	205	Range of Alternatives	Lease stipulation 8 - PCH Post-Calving Habitat Area Furthermore, what is the rationale for choosing "approximately 100 or more" caribou as the trigger for road evacuation? In the NPR-A IAP traffic is stopped "to allow a crossing by 10 or more caribou."1354	Additional text has been added to Lease Stipulation 8.

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211.	Brook	Brisson	Trustees for Alaska	98271	206	Range of Alternatives	Lease stipulation 8 - PCH Post-Calving Habitat Area Nor does BLM provide a rationale for why the date range for evacuating roads begins June 15. This does not align within the post-calving period as displayed in Map 3-21, which starts earlier. This stipulation should have language similar to that in Stipulation 6 that allows the applicable dates to be adjusted in response to the presence of caribou within the program area. It is unclear who will make the evacuation decision, what the consequences will be of not following the protocol, and who will enforce consequences. These things need to be clarified to increase confidence in the ability of this stipulation to reduce impacts on caribou.	The requirements of the travel management plan identified in ROP 23 (section g) would cover these site-specific concerns. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
211. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
212.	Brook	Brisson	Trustees for Alaska	98271	207	Range of Alternatives	Lease stipulation 8 - PCH Post-Calving Habitat Area Finally, it is not specified why road evacuation standards are only specified for the timing limitation areas. Inclusion of road evacuation standards is common-sense and in line with past BLM action in the NPR-A. BLM should apply this standard across all action alternatives and across the entire program area. However, we note that this still is not likely to prevent all impacts in light of major documented effects of roads to calving caribou and summer movements recorded for the CAH.	Road evacuation standards would be covered under ROP 23 (section g) (across all alternatives).

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213.	Brook	Brisson	Trustees for Alaska	98271	208	Range of Alternatives	f. Lease stipulation 9 - Coastal Area The objective for this stipulation includes minimizing “the hindrance or alteration of caribou movement in caribou coastal insect-relief areas.”¹³⁵⁵ The requirement to implement a conflict avoidance and monitoring plan is appropriate; however additional details are needed about standards and requirements for such a plan to ensure effective adaptive management. The DEIS needs to state standards for monitoring plans, including use of measurable, science-based indicators, clear and scientifically-supported requirements for the frequency of data collection, and clear triggers for defining necessary conflict avoidance measures. Conflict avoidance measures should also be specified and include BLM authority to disapprove or delay permitting decisions. Responsibility for developing and implementing the monitoring plan for effects of infrastructure and activities on the coastal habitats and subsistence should be assigned to USFWS, as the surface managing agency, rather than to the lessee. BLM should specify that prior to implementation, this plan must be reviewed and approved by the relevant state, federal, and North Slope Borough wildlife and subsistence officials. It should also be specified that the results and data from the report must be made publicly available, as described below under ROP 23.	Monitoring plans will be tailored to the specific location of development and the resources or activity being monitored; it is not practicable to develop a template that would cover all resources, activities, and requirements for this EIS. Sharing of management monitoring data (if appropriate) would be initiated by the relevant wildlife management authorities; it is outside the scope of this EIS. Federal, state, and local wildlife management agencies would evaluate data provided under ROP 33 to assess wildlife movements.

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214.	Brook	Brisson	Trustees for Alaska	98271	209	Range of Alternatives	Lease stipulation 9 - Coastal Area It is notable that the stipulation requires an impact and conflict avoidance and monitoring plan to be implemented "[b]efore beginning exploration or development."1356 As BLM is currently considering a pending permit application for 3D seismic exploration, BLM should require and make available a pre-exploration conflict avoidance plan as a condition on any permit approval.	The lease stipulations and ROPs identified in Chapter 2 only apply to leases. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations.
215.	Brook	Brisson	Trustees for Alaska	98271	210	Range of Alternatives	g. ROP 18 This ROP states that "[a]ll roads must be designed, constructed, maintained, and operated to create minimal environmental impacts."1357 The BLM should note that achieving this standard with respect to caribou will often mean not building roads at all. Additional details need to be given and scientifically-justified to clarify what standards would meet the ROP objective.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
216.	Brook	Brisson	Trustees for Alaska	98271	211	Range of Alternatives	h. ROP 21 Requirement h in this ROP calls for "[l]ocating facilities and other infrastructure outside areas identified as important for wildlife habitat."1358 BLM needs to clearly identify in the EIS which areas are importance for each species across each season to ensure this otherwise generalized ROP can be meaningfully implemented and to ensure the public has adequate information to assess its efficacy. As pointed out above, the definition given in the DEIS for important caribou calving habitat is insufficient and must be updated to conform with prevailing scientific knowledge. The entire Coastal Plain is important for caribou calving and post-calving habitat.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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217.	Brook	Brisson	Trustees for Alaska	98271	213	Range of Alternatives	. ROP 23 Tentative language in the ROP must be clarified. For example, it states that ramps or buried pipelines "may be required by the BLM Authorized Officer."1360 Under what conditions would this decision be made? What circumstances would trigger use of buried pipelines or ramps? This needs to be made clear and scientifically justified. Furthermore, BLM needs to explain how such features will be accounted for within the 2000 acre limit on surface disturbance.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
217. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
218.	Brook	Brisson	Trustees for Alaska	98271	214	Range of Alternatives	i. ROP 23 We agree with the requirement to perform a study of caribou movement specific to the PCH and CAH prior to authorization of construction. ¹³⁶¹ However, it is important that such studies, as well as creation of an overarching plan for research and monitoring, be carried out by USFWS instead of industry. USFWS is responsible for establishing a long-term integrated baseline and monitoring program for fish and wildlife for the Arctic Refuges, which would include ensuring there is adequate baseline data and research on caribou populations and their habitats and movements to evaluate future impacts of the oil and gas program activities and infrastructure to caribou. ¹³⁶² Similarly, agency scientists should conduct the required studies of caribou movement prior to authorization of construction to ensure that results are robust and made publicly available.	Requiring other federal agencies to do studies and monitoring is outside the scope of the EIS.

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219.	Brook	Brisson	Trustees for Alaska	98271	215	Range of Alternatives	i. ROP 23 If a previous study conducted within the last 10 years is to be used instead of completing new research, it is important that the previous study and associated data be made available to the public prior to authorization by the BLM Authorized Officer (AO) to enable thorough review of the sufficiency of the study. A mechanism should be established for the public to provide input to the AO, with sufficient time included for review of the previous report and commenting.	The public will be able to provide input to the Authorized Officer through future site-specific NEPA processes associated with oil and gas projects. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

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220.	Brook	Brisson	Trustees for Alaska	98271	217	Range of Alternatives	. ROP 23 Requirement g states that "traffic may be stopped throughout a defined area for up to 4 weeks, to prevent displacement of calving caribou,"1363 but it does not give more specific instances of less than a full closure, such as those seen in Stipulation 8. No justification is given for why a four-week maximum is listed for closure. This should be changed to read: "...throughout a defined area whenever necessary to prevent displacement of caribou." This recommended language not only removes the arbitrary 4-week deadline but also broadens the focus from just calving caribou, to reflect the importance of the post-calving and insect relief periods.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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221.	Brook	Brisson	Trustees for Alaska	98271	218	Range of Alternatives	ROP 28 In order "to conserve important habitat types," this ROP requires "[u]se [of] ecological mapping as a tool to assess wildlife habitat before developing permanent facilities."1364 Creation of habitat maps is an important step toward "detailed analysis of development alternatives,"1365 however, BLM does not specify how the resulting map would be used or what guidelines or thresholds would be used to ascertain whether the goal of conserving important habitat types is met under future development proposals. This should be made clear.	The BLM will use ecological mapping to inform future decision-making related to development of alternatives on site-specific projects.
222.	Brook	Brisson	Trustees for Alaska	98271	219	Range of Alternatives	ROP 28 While, map preparation prior to approval of facility location and construction and ground-based wildlife surveys are commendable, the DEIS fails to include any guidelines to inform when and how BLM will determine if such surveys are "deemed necessary."1366 These must be clarified.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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223.	Brook	Brisson	Trustees for Alaska	98271	220	Range of Alternatives	ROP 33 This ROP requires geospatial representations of new infrastructure be provided to BLM and the State of Alaska "to be used in monitoring and assessing wildlife movements during and after construction."1367 This is a very important ROP and we appreciate BLM including it in the DEIS, along with inclusion of construction beginning and end dates as ancillary data. As much as possible, these dates should be provided for different components of the project to allow the finest scale analyses of construction impacts on wildlife movement. To fully achieve the objective of this ROP, we request that BLM specifically state in this ROP that provided geospatial data will be made publicly available. Furthermore, BLM should specify how it will integrate the resulting data into the USFWS monitoring plan described above. This must include how monitoring will inform management decisions, such as through establishing impact thresholds beyond which permitting will be stopped or increasing mitigation requirements.	Requiring other federal agencies to do studies and monitoring is outside the scope of the EIS. Data related to a site-specific proposal would be available to the public through that project's NEPA analysis.

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224.	Brook	Brisson	Trustees for Alaska	98271	222	Range of Alternatives	ROP 34 This ROP seeks to "[m]inimize the effects of low-flying aircraft on wildlife" and people.¹³⁶⁸ This is an important goal. However, the ROP must be strengthened and improved to meet its objective. First, requirement c specifies a minimum altitude of 1500 feet above ground level (agl) for flights over caribou calving range and near raptor nesting sites. Federal Aviation Administration guidance recommends a minimum altitude of 2000 feet agl over all National Wildlife Refuges and other noise-sensitive areas.¹³⁶⁹ ROP 34 should be amended to align with this guidance and increase the minimum altitude to 2000 feet over the entire program area at all times. This will help meet the DEIS requirement to maintain the Refuge's original purposes under ANILCA while also complying with the 2017 Tax Act.¹³⁷⁰ It will also be consistent with the importance of the entire Coastal Plain for calving and post-calving habitat over time. It should be noted, however, that even incorporating this minimum requirement is unlikely to prevent impacts to caribou. Flight ceilings often are lower than 1500 feet agl, particularly during calving,¹³⁷¹ so there is concern that weather exceptions will increase the impact of aircraft on caribou despite the guidance of this ROP.	Based on existing studies, aircraft that maintain flight altitudes of 660 meters (2,000 feet) above ground level caused little or no disturbance to caribou during any season, and flight altitudes above 300 meters (1,000 feet) above ground level caused few strong responses by caribou (Shideler, R.T. 1986. Impacts of human developments and land use on caribou: A literature review. Volume II. Impacts of oil and gas development on the Central Arctic Herd. Alaska Department of Fish and Game Technical Report 86-3. Habitat Division. Juneau, Alaska). pagesThis clearly supports 1,500 feet being a reasonable elevation. Alternative D has been revised to 2,000 feet above ground level (agl) to analyze the difference.
225.	Brook	Brisson	Trustees for Alaska	98271	223	Range of Alternatives	ROP 34 Second, requirement d seeks to "[m]inimize the number of helicopter landings in caribou calving ranges from May 20 through June 20."¹³⁷² Given the extreme importance of the calving period for population well-being and the sensitivity of cows with newborn calves to disturbance, this should be amended to prohibit all helicopter landings in calving grounds during this period.	Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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226.	Brook	Brisson	Trustees for Alaska	98271	224	Range of Alternatives	Third, the requirements under Alternative D expand the altitude and landing restrictions to include the post-calving period. This is necessary given the extreme importance of the post-calving period to caribou and their need to access high quality forage unhindered (see above). In light of this, these provisions should apply consistently across all action alternatives. Provisions should also be expanded to include the period where cows arrive on the calving ground. If animals are deflected and unable to reach the calving ground, the consequences will be as severe as if they were displaced from the calving ground. The start date should be extended to May 1st to accommodate this and language should be included, as is done with traffic effects above, to provide flexibility if migration timing alters with a changing climate.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written

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226. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
227.	Brook	Brisson	Trustees for Alaska	98271	225	Range of Alternatives	Requirement a mentions a plan with strategies that include aircraft types, flight altitudes and routes.1375 To enable more detailed and spatially-explicit studies of aircraft impacts in the Arctic Refuge, we request that BLM add a requirement to ROP 34 that specifies collection of geospatial aircraft data reporting the location, time, altitude, and aircraft type of each permitted flight within the program area. These data should be housed by the USFWS or another designated federal repository and made available to researchers to enable more complete analysis of aircraft use within the Coastal Plain and its effects on wildlife, subsistence hunters, and surface resources.	Data collection beyond the requirements of the aircraft use plan is outside the scope of the EIS. It is not within the BLM's authority to require other agencies to do studies and monitoring or house data. Sharing of management monitoring data (if appropriate) would be initiated by the relevant management authorities and is outside the scope of this EIS.
228.	Brook	Brisson	Trustees for Alaska	98271	226	Range of Alternatives	ROP 42 This ROP necessarily prohibits chasing wildlife, especially caribou, with ground vehicles.1376 The qualifier "with ground vehicles" should be deleted from the requirement language; chasing of wildlife with any type of vehicle should be prohibited.	ROP 34 (section e) discusses the hazing of wildlife as prohibited. Operators are required to comply with federal laws regardless of permit requirements.

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229.	Brook	Brisson	Trustees for Alaska	98271	237	Range of Alternatives	Brown bears den during the winter and can be disturbed by noise. ROP 10 requires a 0.5 mile buffer around occupied brown bear dens identified by the Alaska Department of Fish and Game (ADFG). But the DEIS sets forth no basis for this buffer to ensure that it is sufficiently protective, and no information to indicate what distance from an occupied brown bear den is safe for seismic activity to operate without disturbing the denning bear.1429	Reynolds et al. (1986) examined instrumented grizzly bears in NPR-A in relation to seismic activities. When seismic exploration vehicles were operating up to 0.8 kilometers (0.5 miles) from a denned bear, fluctuations in collar temperature and signal amplitude were recorded and mean heart rates appeared elevated. Bears apparently show increased heart rates during undisturbed conditions. The authors concluded if bears responded to noises associated with seismic exploration activities, effects on the bears were probably minimal. None of the radio-collared bears deserted their dens in response to seismic activities, and all emerged in spring with no observed deaths of accompanying offspring. See Reynolds, P.E., H.V. Reynolds, and E.H. Follmann. 1986. Responses of Grizzly Bears to Seismic Surveys in Northern Alaska. In: International Conference on Bear Research and Management. 6:169–175.

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230.	Brook	Brisson	Trustees for Alaska	98271	242	Range of Alternatives	Also, ROP 4 says that the lessee: would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADFG). The plans would include specific measures identified in the current USFWS Polar Bear Mitigation Plan and would be adapted as needed for grizzly bears. This language is vague even for polar bears, and even worse for brown bears in terms of providing any assurance that mitigation measures would be effective, or that human-bear interactions related to oilfield development on the coastal plain would not cause significant adverse impacts to predators and prey.	The bear interaction plan would be approved by the USFWS, but it is the operator's document as part of the MMPA ITR/LOA. It is not within the BLM's authority to provide direction on how measures would be adapted for grizzly bears. Adaptation for grizzly bears falls within the authority of the Alaska Department of Fish and Game.
231.	Brook	Brisson	Trustees for Alaska	98271	248	Range of Alternatives	It completely ignores the Potential Biological Removal (PBR) level established for the SBS stock under the MMPA. PBR is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its Optimum Sustainable Population (OSP). ¹⁴⁵⁴ PBR for the SBS stock has most recently been calculated at 14, far below the average number of bears removed via annual harvest alone. ¹⁴⁵⁵ According to a recent FWS memorandum, with at least 33.2 bears removed from the SBS population annually compared to a PBR of 14, it is clear that "the ability of the population to reach OSP is [already] being compromised." ¹⁴⁵⁶ The DEIS neglects to consider this baseline information in its cursory evaluation of the status of the SBS stock or incorporate it into its cumulative effects analysis. As noted in the FWS	Human-caused mortality was described in the DEIS on p. 3-125 (5th paragraph, re. Native harvest) and on p. 3-140 (lethal take from oil and gas activities), but more information from the most recent USFWS Polar Bear Program annual report for 2017 (published in 2018) was added on p. 3-125 to quantify other categories of human-related mortality. The most recent estimate of PBR for the SBS stock is 14 animals, based on the minimum population estimate of 782 bears in the most recent draft stock assessment report by USFWS (82 FR 28526), which has not yet been finalized. This low PBR estimate underscores the importance of avoiding program-related mortality because the annual subsistence harvest alone approaches or exceeds PBR for this stock. A determination of negligible impact on the SBS stock of bears will be required for approval of the

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231. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	memorandum, it is reasonable to assume that any additional lethal take from proposed seismic testing would additionally impact the SBS stock causing further adverse effects on annual rates of recruitment or survival.1457 Likewise, over the lifetime of an industrial oil field, from post-lease exploration, to infrastructure construction, oil and gas development and production, it is reasonable to assume that some additional level of lethal take will occur. 1455 FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 11. Even using the 2010 minimum population estimate of 1397 SBS bears, PBR was calculated at 22 - also well below the mortality from harvest alone. FWS Polar Bear Stock Assessment 2010 at 3. 1456 U.S. Fish and Wildlife Service, Memo re: 1002 Coastal Plain Incidental Take Regulation Application, September 2018 at 3 available at https://assets.documentcloud.org/documents/5647572/Alaska-Memo.pdf Notably, while comparison to the PBR calculated by FWS demonstrates that oil and gas activities under the program are likely to cause impacts that the DEIS has failed to acknowledge, the PBR itself cannot rationally be used to show an acceptable take level in the context of a stock like the SBS population that is already experiencing such catastrophic decline.1458 1458 See March 2019 Amstrup Letter at 33.	Incidental Take Regulations (ITRs) currently being developed for the Arctic National Wildlife Refuge. The increasing likelihood of polar bear/human encounters was described in Draft EIS Section 3.3.5, but it does not automatically follow that mortality will increase accordingly, judging from the very low frequency of mortalities associated with Alaska oil and gas industry activity since the 1960s. That experience suggests that the number of industry-related mortalities that may occur from leasing in the program area are likely to be orders of magnitude lower than the direct removal of bears from the SBS stock through human harvest. The MMPA ITR/LOA process has been highly effective at reducing mortality over the last 3 decades in which it has been in effect, as has the separate authorization of intentional take through deterrence of bears that pose a human safety threat by specially trained personnel.

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232.	Brook	Brisson	Trustees for Alaska	98271	252	Range of Alternatives	BLM's range of alternatives is inadequate. ¹⁴⁶⁵ The three action alternatives do not present a reasonable range sufficient to analyze differences in impacts to polar bears. The EIS plainly states that "[a]ll the action alternatives would affect large areas of the designated terrestrial denning unit of critical habitat for polar bears; any facilities constructed within 20 miles of the coast would be located in that critical habitat unit." ¹⁴⁶⁶ Additionally, all of the action alternatives assume the entire Coastal Plain will be open to seismic exploration, which by itself may have lethal impacts on polar bears. The minor variations between the action alternatives do not offer a meaningful difference in impacts to polar bears and their critical habitat. For instance, under Lease Stipulation 5 in Alternative D, BLM would prohibit permanent oil and gas structures from being within 1 mile of the small portion of potential denning habitat located from the coastline to 5 miles inland on the Niguanak River, Katakturuk River, Marsh Creek, Carter Creek, and Sadlerochit River, and all associated tributaries. ¹⁴⁶⁷ Similarly, under Alternative D, BLM would prohibit oil and gas "activities" within that same small portion of the denning habitat from October 30 through April 15.	The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.

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233.	Brook	Brisson	Trustees for Alaska	98271	253	Range of Alternatives	The only rationale provided by BLM for protecting that portion of the denning habitat is that 37% of known historic dens in the Coastal Plain have been observed there, even though that area represents only 8.8% of the terrestrial denning critical habitat within the Coastal Plain. 1468 BLM provides no scientific basis to rely on the historical den occurrences to conclude that this portion of the suitable denning habitat is the only portion of the suitable denning habitat in the Coastal Plain that requires the protection conferred by Lease Stipulation 5. BLM does not explain whether the agency followed any scientifically sound approach to identifying areas within the suitable denning habitat that have a higher likelihood of den occurrence than other portions. For example, BLM does not explain or evaluate whether it has considered the effect of potential telemetry or survey biases, which may mean that density of denning in other areas is underestimated due to those areas being less accessible to researchers. Moreover, BLM has failed to explain whether or how it has taken climate change impacts into account, and how such impacts may shift preferred denning locations in the future compared to historically observed preferences.	The BLM worked with the USFWS, which used the most current data, to calculate and define the area of the denning habitat that appeared to be selected over other areas given the most current information of historical den sites (with full knowledge that den distributions will most likely shift in the future). The referenced information was not omitted. It is described on preceding pages in the Maternal Denning subsection of Section 3.3.5 (Draft EIS pages 3-127 and 3-128), as well as in the second paragraph following the bullet list on Draft EIS page 3-132; however, another element has been added to the bullet list for completeness.

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234.	Brook	Brisson	Trustees for Alaska	98271	254	Range of Alternatives	BLM should have evaluated impacts from oil and gas activities on all terrestrial denning critical habitat on the Coastal Plain, and considered measures to mitigate impacts to that broader geographic area. It also should have considered the impacts of alternative seismic exploration methods and sought to mitigate those impacts specifically.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to current ITRs in the west where required mitigation is to avoid occupied dens by 1 mile, as described on Draft EIS page 3-134. Further, the EIS states that approximately 20 dens annually could be found in the Arctic Refuge and could be affected. The parts of Section 3.3.5 pertaining to polar bears describe in detail the population status of the SBS stock and the current and likely effects of climate change on their habitats, behavior, and demography.
235.	Brook	Brisson	Trustees for Alaska	98271	266	Range of Alternatives	BLM also failed to explore alternatives or mitigation measures to reduce spills and protect areas of particular importance to bears, like feeding and resting areas, summer refugia and winter denning areas.	The BLM has incorporated mitigation measures to minimize activity disturbance to polar bears in the EIS (see Chapter 2). Text has been added to Section 3.3.5 regarding increased risk of disease transmission where bears congregate, such as at whalebone piles, citing the PBCMP (USFWS 2016). Text has also been added regarding risk from marine spills in such areas.
236.	Brook	Brisson	Trustees for Alaska	98271	280	Range of Alternatives	Throughout its analysis, BLM improperly relies on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears. ¹⁵³⁸ The agency fails to state that such ITRs would be required for this leasing program, nor does the EIS explain its assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities.	The BLM has removed or streamlined ITR wording for the Coastal Plain to explain that it is referring to the current ITRs in place west of the Coastal Plain. Verbatim mitigation, monitoring, and reporting text from the Beaufort Sea ITRs has been placed in Table 2-3 to tie into the current level of oversight that is required of operators working in polar bear country.

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237.	Brook	Brisson	Trustees for Alaska	98271	281	Range of Alternatives	The use of FLIR surveys and dogs to detect polar bear dens would not be required by the lease or by BLM; the DEIS says that they would be conducted "as stipulated by the LOAs and polar bear interaction plans that would be required."1539 But LOAs are not necessarily required, depending on circumstances, nor are polar bear interaction plans mandated to require the use of FLIR surveys or dogs. BLM must require the mitigation measures it is relying on to make any conclusions about impacts to polar bears. At present, the DEIS speculatively discusses mitigation measures that might be required or suggested by another agency, rather than mitigation measures it intends to impose. The DEIS fails to consider whether the measures actually will occur. It also fails to consider their efficacy, or lack thereof, as discussed above.	The BLM has removed or streamlined ITR wording for the Coastal Plain to explain that it is referring to the current ITRs in place west of the Coastal Plain. Verbatim mitigation, monitoring, and reporting text from the Beaufort Sea ITRs has been placed in Table 2-3 to tie into the current level of oversight that is required of operators working in polar bear country. All operators will be subject to regulations and stipulations under the ESA and MMPA. Site-specific oil and gas projects will require additional NEPA, MMPA authorization, and ESA consultation, at which time additional site-specific mitigation measures would be identified.
238.	Brook	Brisson	Trustees for Alaska	98271	282	Range of Alternatives	The EIS also relies on a buffer zone around known dens to mitigate noise disturbance.1540 However, such a buffer is ineffective if den-detection surveys are not mandated in the first place.1541 Notably, Alternatives B and C do not mandate pre-activity den-detection surveys for winter overland moves and seismic work.1542 Since polar bears do not return to the same exact den location each year, it is unclear how a current active den location would ever be "known" absent a pre-activity den-detection survey; and since dens are not visible to the naked eye, it is unclear how a den would be "observed" prior to disturbing it absent a den-detection survey using FLIR.	Surveys are a requirement of the USFWS to comply with the ESA and MMPA. All operators will be subject to regulations and stipulations under the ESA and MMPA.

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239.	Brook	Brisson	Trustees for Alaska	98271	283	Range of Alternatives	Further, even when pre-activity den-detection surveys are conducted, such a buffer will fail to protect dens that remain undetected due to the high failure rate of the den-detection method employed. Alternative D, while stating that den-detection surveys for winter overland moves and seismic work "would" be conducted by parties subject to the ROP, does not specify the methods to be employed, instead stating that the pre-activity den-detection survey would be conducted "in consultation" with FWS and/or NMFS.1544 It is not clear whether the term "consultation" is intended to mean the interagency consultation process required by ESA section 7, or merely that the party seek guidance from the other agencies. The DEIS thus leaves it to a future, possibly voluntary, process by another agency to decide what survey methods will be required while misleadingly indicating that FLIR-detection and the use of dogs will mitigate impacts.	Surveys are a requirement of the USFWS to comply with the ESA and MMPA. All operators will be subject to regulations and stipulations under the ESA and MMPA.
240.	Brook	Brisson	Trustees for Alaska	98271	284	Range of Alternatives	And as discussed above, BLM fails to provide any science to indicate that a one-mile buffer will protect denning bears from foreseeable noise impacts, especially seismic testing and pile-driving.	The 1-mile buffer is not specific to Stipulation 5. Rather, the 1-mile buffer is stipulated by the current ITRs around occupied maternal dens and is central to the no-disturbance buffer zone surrounding the barrier islands unit of designated critical habitat. The USFWS based the radius of this buffer on behavioral observations of polar bears in Svalbard, as explained on Draft EIS page 3-137. The potential destruction (direct loss) of potential denning habitat will be addressed in future NEPA evaluations of specific development proposals involving gravel mining and placement of construction of roads and pads. The Draft EIS accurately describes designated critical habitat and the

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240. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	density and importance of maternal denning in the program area. Seismic exploration in the program area currently would be evaluated in a separate NEPA analysis. Both that activity and others considered under the leasing program will require new ITRs, supported by biological assessments and biological opinions that rely on negligible impact determinations under the MMPA and no-jeopardy findings under the ESA. Mortality data from the USFWS Polar Bear Program annual report for 2017 (USFWS 2018) show that industry activity in Alaska has had a substantially smaller impact (0.7 percent of 420 bears removed during 2008–2017) on the SBS stock than has the direct removal of bears through human harvest (90.7 percent; USFWS 2018). The impacts of underwater noise are discussed in depth in the Final EIS on Effects of Oil and Gas Activities in the Arctic Ocean (NMFS 2016). That document is incorporated by reference in the EIS.
241.	Brook	Brisson	Trustees for Alaska	98271	285	Range of Alternatives	Also, BLM provides no buffer for non-denning bears, despite evidence indicating strong aversion reactions of non-denning bears, especially females and cubs, to industrial noise.	Distance setbacks for non-denning bears for aircraft and vessels have been incorporated into Table 2-3. In addition, timing limitations have been incorporated into some of the alternatives to separate activities and the use of habitat by non-denning bears, essentially creating “buffers.”

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242.	Brook	Brisson	Trustees for Alaska	98271	286	Range of Alternatives	Also, ROP 4 says the lessee/operator/contractor "would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADFG). The plans would include specific measures identified in the current USFWS Polar Bear Mitigation Plan . . ." The DEIS does not cite to this Mitigation Plan or identify the specific measures, leaving them unexamined for efficacy. ROP 4 doesn't require that all such measures be included. The FEIS should include the Mitigation Plan, identify the specific measures, and require that they all be included. Even that, though, would not constitute an actual evaluation of the impacts to polar bears from these interactions.	Mitigation plans are developed for specific projects that have not yet been proposed. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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243.	Brook	Brisson	Trustees for Alaska	98271	289	Range of Alternatives	The proposed Lease Stipulations and Required Operating Procedures include Lease Notice 1, which states that BLM would not approve any activity that may affect any listed species or critical habitat until it completes its obligations under applicable requirements of the ESA, including completion of any required procedure for conference or consultation. ¹⁵⁴⁶ This provision cannot be properly categorized as a mitigation measure, as BLM is merely characterizing the legal requirements of ESA section 7 consultation. The ESA imposes a substantive obligation on federal agencies, but BLM does not explain how it will comply with those requirements at the lease sale stage. ¹⁵⁴⁷ For instance, BLM should explicitly state whether the agency will consult with FWS before issuing leases on the Coastal Plain. BLM's attempts to frame its existing ESA obligations as a mitigation measure in its impacts analysis does not obviate BLM's responsibility to provide for measures that minimize and avoid impacts to polar bears.	To comply with Section 7(a)(2) of the ESA, the BLM began consulting with the USFWS and National Marine Fisheries Service (NMFS) early in the EIS process. Both provided input on issues, data collection and review, and alternatives development. The BLM is consulting with the USFWS and NMFS to identify ESA issues and to develop the draft biological assessment.

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244.	Brook	Brisson	Trustees for Alaska	98271	290	Range of Alternatives	Thus it is vitally important for the DEIS to consider, and for any future leases to clearly establish through their terms, whether BLM is retaining the authority to permanently and completely preclude surface disturbing activities, if necessary to protect a listed species, or whether BLM is merely retaining the authority to condition the access to oil and gas resources so as to reduce impacts to the listed species. Unless the lease terms do the former, BLM ostensibly would be giving away a critical component of its discretion - and the ability to protect polar bears from injury and disturbance -at the leasing stage.1550 The DEIS, and the ESA consultation that the DEIS claims is occurring now at the leasing stage, must consider the impact of BLM forsaking that discretion. If BLM is purporting to retain that full discretion, then it should do so unequivocally in the terms of the lease. If not, the DEIS and ESA consultation must evaluate the impacts accordingly.	To comply with Section 7(a)(2) of the ESA, the BLM began consulting with the USFWS and NMFS early in the EIS process. Both provided input on issues, data collection and review, and alternatives development. The BLM is consulting with the USFWS and NMFS to identify ESA issues and to develop the draft biological assessment. All future site-specific activities will require compliance with Section 7 of the ESA.
245.	Brook	Brisson	Trustees for Alaska	98271	292	Range of Alternatives	Even for leases that BLM describes in this DEIS as being "NSO," it is not clear from the DEIS whether BLM would retain the authority post-leasing to permanently preclude activities on areas immediately adjacent to the NSO areas that would be required to access the oil and gas associated with the NSO leases. In short, it is not clear what BLM means by "NSO" in this DEIS, and the agency should carefully explain whether it is retaining the authority to deny all development on the NSO lease permanently, or whether the "NSO" lease entails a right of access via adjacent areas, and therefore potential spill-over effects on the NSO areas themselves that BLM will not be able to entirely and permanently preclude after the leasing stage.	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section; therefore, if an operator were required to access resources that required a right-of-way within the Coastal Plain, prohibiting such access would not comply with the Tax Act. See Section 1.9.1 of the EIS for further explanation.

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246.	James	Warren	—	18479	3	New alternative proposed	The Draft EIS reads in a very confusing manner in Section 2.3, ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS: "The BLM considered an alternative that would make only 800,000 acres available for lease sales, which is the minimum acreage necessary to comply with the requirement in Section 20001(c)(1) of PL 115-97 to hold not fewer than two lease sales, each of which offers not fewer than 400,000 acres of the areas having the highest potential for discovery of hydrocarbons. The best available information regarding hydrocarbon discovery potential in the Coastal Plain provides a rough estimate of 427,900 acres of high HCP, 658,400 acres of medium HCP, and 477,200 acres of low HCP. Acreages within low and medium HCP areas must be made available, in addition to the high HCP areas, for the two lease sales to meet the 800,000-acre minimum under PL 115-97. In addition, the actual potential development area would be much less with the 2,000-acre limitation on surface disturbance. This alternative would also be similar in concept to Alternatives D1 and D2, which make only 1,037,200 acres available for lease sales. For all these reasons, an alternative that considered only 800,000 acres available for leasing was eliminated from detailed analysis." This paragraph is a confusing set of assertions that do not make coherent sense. The requirement is to hold two sales of at least 400,000 acres. Since any sale of that minimum will have to reach beyond the high HCP acreage, why is it not possible to hold two sales of the minimum designated in the Tax Bill? The paragraph makes that sound impossible. Why? Second, the paragraph flatly states that the "actual	Alternative D2 has been modified to offer 800,000 acres for leasing. Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.

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246. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	potential development area would be much less with the 2000-acre limitation on surface disturbance," but that is hedging the statement about the numbers of acres to be leased, as if it is an excuse for leasing more than 800,000 acres. (Note that how BLM is defining the 2000 acres of surface disturbance is itself problematic at best.) This "actual potential development" has no logical connection to the question of the number of acres to be leased. Third, the paragraph leaps to point out that D1 and D2 are the closest to the actual minimum requirement, as if they were the least number of acres BLM can possibly make available for lease sales. That is logically fallacious: you are drawing a foregone conclusion. In at least three ways, the question of alternatives considered but eliminated is logically flawed.	(see above)
247.	Russell	Peterson	—	25104	1	New alternative proposed	The alternatives section of the eis should be expanded to more fully identify the benefits of taking no action on this leasing proposal. Pursuing clean energy alternatives, including solar, wind and tidal/wave sources with advanced battery storage capabilities would be less costly, would advance the nation's objective of creating higher paying work opportunities, would avoid the proposal's adverse effects on global warming, and would also avoid the proposal's potential to adversely effect water and air quality, sensitive soils and endangered wildlife populations	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ's Forty Most Asked Questions Concerning CEQ's NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
248.	Withheld	Withheld	—	48700	1	New alternative proposed	All action alternatives exceed the minimum acreage require by the tax act. Therefore I propose a new alternative, which would be at the minimum required acreage (400,000 per sale), as well as strictly obey the 2000 acre cap (with no credits gained for reclamation), including all infrastructure-related disturbance.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
249.	Withheld	Withheld	—	55397	2	New alternative proposed	Please provide some other alternatives with less land impacted (why not the minimum number of acres stated by the law?), larger wilderness buffers and ways to respect the rights and preferences of the Alaska Native communities affected.	Alternative D2 has been revised to offer 800,000 acres of land available for lease. There is no information suggesting that a larger wilderness buffer would be more protective to wilderness values. The USFWS recommended the current buffer width.
250.	Paul	Reichardt	—	55513	1	New alternative proposed	My fundamental concern is that BLM has failed to develop an Alternative that provides for the minimum leasing and subsequent potential development required under the Tax Act of 2017. BLM's rationale for opening over one million acres to leasing (Vol 2, pg 2-39), rather than the 800,000 required in the legislation, is unconvincing at best.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
251.	Chad	Hansen	—	56842	1	New alternative proposed	It contains four action alternatives for leasing and drilling, but none of these alternatives minimizes the area to be leased and drilled.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
252.	Withheld	Withheld	—	57191	1	New alternative proposed	This DEIS proposes a no action alternative and 3 alternatives. It is in adequate in that it does not address an alternative for the minimum requirement under the law—for two lease sales of 400,000 acres each, which is 20% less acreage available for leasing than the most restrictive alternative analyzed. The reason for not doing this analysis is not well explained. BLM should amend this DEIS to show that alternative.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
253.	Withheld	Withheld	—	58633	5	New alternative proposed	It contains four action alternatives for leasing and drilling, but none of these alternatives minimizes the area to be leased and drilled.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.

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254.	Martha	Raynolds	—	67039	1	New alternative proposed	There is no minimal impact alternative presented or analyzed. The Tax Act requires leasing, and up to 2,000 acres of impact. But all the alternatives have maximum impact, with 2,000 acres of gravel fill placement plus all the additional impacts from gravel mines, seismic exploration, dust, thermokarst, altered drainage, etc., etc. The result is that Alternative D, with least area available for surface occupancy ends up with the most dense road network. In the EIS, BLM should include a minimal impact alternative, with no gravel fill allowed (just directional drilling from adjacent private lands), and one with only 1,000 acres of gravel placement allowed.	Alternative D2 has been revised to offer 800,000 acres of land available for lease. Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.
255.	Ronald	Yarnell	—	67164	4	New alternative proposed	The range of lower-impact alternatives is not sufficient. One of them should be to not do anything until closer to 2024. An additional alternative should include only the opening up of the high carbon potential area for seismic exploration. This area comprises 427,900 acres, more than is legally required. An EIS for the additional 400,000 acres could be done at a later date. There is nothing in the law that says anything over 400,000 acres has to be analyzed at this time.	Based off best available information, the action alternatives maximize the areas with the highest hydrocarbon potential (HCP); the action alternatives balance areas with the highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections). Such an alternative (delaying leasing) would have impacts similar to alternatives already analyzed. The BLM would expect little to no difference in impacts under such an alternative. This is because lands that were offered but not leased in the first sale are unlikely to be leased in a second sale a few years later given that exploration is unlikely to substantially advance during that time period.

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256.	Christopher	Lutz	—	67596	1	New alternative proposed	The draft ANWREIS only lays out three options ("action alternatives") for leasing between two-thirds and all of the coastal plain's 1.5 million acres. Additional options that would lease smaller areas of the refuge should also be assessed, particularly areas that might have significantly less oil and gas drilling wildlife impact	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
257.	Withheld	Withheld	—	68965	7	New alternative proposed	I recommend major revision and re-release of a revised draft EIS that has: *An adequate range of alternatives, including an appropriate least environmentally damaging practicable alternative	LEDPA is a requirement of the EPA Section 404(b)(1) guidelines under the CWA, and not applicable to this EIS. The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.
258.	Withheld	Withheld	—	68965	16	New alternative proposed	I believe that a revised draft EIS that includes analysis of an appropriate least environmentally damaging practicable alternative would lead to the conclusion that this new action alternative should be the preferred alternative. This alternative could fulfill the requirements of PL 115-97 while minimizing impacts on local communities, as well as other Refuge resources and objectives.	LEDPA is a requirement of the EPA Section 404(b)(1) guidelines under the CWA, and not applicable to this EIS. The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.

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259.	Withheld	Withheld	—	68965	18	New alternative proposed	1. The range of alternatives in the draft EIS is inadequate. Current action alternatives call for oil and gas leasing on 66 to 100 percent of the coastal plain. Please develop and analyze an alternative that includes no more than 51 percent (2 times 400,000 acres as mandated in PL 115-97, divided by the 1,560,000 acre total area of the coastal plain) or less of the coastal plain as a least environmentally damaging practicable alternative. Alternative B represents a “bookend” alternative on the most impactful end of the spectrum, but the draft EIS does not include a corresponding least-impact bookend (both sub-alternatives D1 and D2 go beyond minimum requirements in PL 115-97). Given the high level of controversy surrounding drilling on the ANWR coastal plain, it would be appropriate to develop and fully analyze an alternative that is designed to be a least environmentally damaging practicable alternative. Decision makers need the information that would be generated by such an analysis in order to make a well informed selection of a preferred alternative.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.

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260.	Withheld	Withheld	—	68965	52	New alternative proposed	23. Section 2.3, page 2-39. From the perspective of offering decision makers an alternative that genuinely comports with the objectives of a least environmentally damaging practicable alternative, the BLM should develop an alternative that offers 800,000 acres for lease. In my opinion, the arguments offered in this section for why such an alternative was eliminated from further analysis appear arbitrary, particularly the contention that increasing the lease area by more than 200,000 acres, at least a 20 percent increase, is inconsequential. Not including an 800,000 acre alternative is a serious deficiency in this draft EIS (please see general comment (1) above).	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
261.	Withheld	Withheld	—	69211	3	New alternative proposed	Consider as an alternative(s) expanding existing oil production facilities rather than disturbing the project area.	PL 115-97 directs the Secretary to implement an oil and gas leasing program within the Coastal Plain of the Arctic National Wildlife Refuge.
262.	Withheld	Withheld	—	69211	3	New alternative proposed	The document should discuss if and how other oil fields could be utilized and probably have a greater capacity to yield higher production amounts than the project area.	PL 115-97 directs the Secretary to implement an oil and gas leasing program within the Coastal Plain of the Arctic National Wildlife Refuge.

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263.	Curt	Leigh	—	69329	13	New alternative proposed	the EIS is deficient because it evaluated a very limited range of alternatives and fails to identify mitigation or restoration measures that will prevent or restore the significant, long term adverse impacts on publically owned non hydrocarbon resources. The range of consideration for the action alternatives is limited to only those that maximize the opportunity to exploit the hydrocarbon reserves on the Coastal Plain. All of the action alternatives contemplate leasing all of the areas with high potential for hydrocarbon production. The number of acres to be disturbed is even the same in each action alternative. The difference seems to be the source of the surface disturbance. Surprisingly, Alternative D, which is identified as a caribou protection alternative, includes more road mileage and more satellite drill pads than the alternatives which claim to have fewer restrictions (EIS p.B-23). The EIS needs a broader range of action alternatives. There should be at least one action alternative which involve less than full exploitation of the hydrocarbon reserves, and there is no discussion or evaluation of waiting for future technological advancements in oil extraction that would allow hydrocarbon recovery without any surface disturbance.	Alternative D2 has been revised to offer 800,000 acres of area available for leasing. PL 115-97 requires a lease sale to be held within 4 years; options for extraction technology will be analyzed in future project-specific NEPA analyses.

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264.	Becky	Long	—	69710	6	New alternative proposed	Comment- Page 2-39 Section 2.3 Alternatives Considered But Eliminated From Detailed Analysis. Comment Title- An Alternative E must be considered. The Project Area of 800,000 acres fulfills the statement on P. 2-1 which says a wide range of management options consistent with applicable law should be considered. This 800,000 acre alternative complies with the PL 115-97 law. Title II. Sec 20001(c)(1)(B)(i)(I) states not fewer than 400,000 acres area-wide in each lease sale. A smaller footprint alternative with the 2000 acre surface limitation would satisfy much of the public.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.
265.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	1	New alternative proposed	Action alternatives considered for drilling in the Coastal Plain of the Refuge cannot undermine the purpose of the Refuge, as outlined in the Alaska National Interest Lands Conservation Act (ANILCA): (i) to conserve fish and wildlife populations and habitats in their natural diversity; (ii) to fulfill the international fish and wildlife treaty obligations of the United States; (iii) to provide the opportunity for continued subsistence uses by local residents; and (iv) to ensure water quality and necessary water quantity within the refuge. The DEIS presents no action alternative that clearly meets all the above conditions. A new action alternative is needed to conform to the requirements of ANILCA.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
266.	Withheld	Withheld	—	72125	33	New alternative proposed	Development Comments (Section B.7.3): Proposed Alternatives W1 and W2 restrictions would necessitate using the existing barge landing facilities at Point Thomson. Alternatives W1 and W2 require that water be sourced from outside of the Arctic National Wildlife Refuge, which could possibly result in a seawater treatment plant to the west of the Canning River delta.	Neither of the alternatives proposed would meet the various requirements of PL 115-97. The alternatives would not allow for access to the minimum of 400,000 acres of the highest hydrocarbon potential lands available in at least two lease sales (a total of 800,000 acres), even with current technologies using 6-mile directional drilling in ideal geological conditions. Additionally, the Secretary is required to authorize up to 2,000 surface acres for development.
267.	Withheld	Withheld	—	72125	33	New alternative proposed	Figure 3 displays conceptual locations of facilities and pipelines for proposed Alternative W2. Alternative W2 should be further developed and rigorously analyzed. Figure 3. Alternative W2 conceptual layout of facilities and pipelines. [See original comment PDF for figure]	Neither of the alternatives proposed would meet the various requirements of PL 115-97. The alternatives would not allow for access to the minimum of 400,000 acres of the highest hydrocarbon potential lands available in at least two lease sales (a total of 800,000 acres), even with current technologies using 6-mile directional drilling in ideal geological conditions. Additionally, the Secretary is required to authorize up to 2,000 surface acres for development.

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268.	Withheld	Withheld	—	72125	33	New alternative proposed	Lease Stipulation 2-Canning River Delta and Lakes Comments (Section 2.2): Alternatives W1 and W2 requirement/standard should state that, “[p]ipelines, road crossings, and other permanent facilities must be located within the area identified for surface occupancy or along the corridor as depicted in the leasing map (see Figure 3). Minor deviations from this corridor location may be considered through the permitting process.” ROP 8-Maintain natural hydrologic regimes and populations and habitat Comments (Section 2.2): Alternatives W1 and W2 requirement/standard should state that, “[w]ater for oil and gas purposes must be sourced from outside of the Arctic National Wildlife Refuge.” ROP 24-Minimize impact of mineral materials mining Comments (Section 2.2): Alternatives W1 and W2 requirement/standard should delete parts c, d, and e since the direction would be inconsistent with ROP 8.	Neither of the alternatives proposed would meet the various requirements of PL 115-97. The alternatives would not allow for access to the minimum of 400,000 acres of the highest hydrocarbon potential lands available in at least two lease sales (a total of 800,000 acres), even with current technologies using 6-mile directional drilling in ideal geological conditions. Additionally, the Secretary is required to authorize up to 2,000 surface acres for development.
269.	Withheld	Withheld	—	72125	33	New alternative proposed	The range of alternatives does not include an alternative that makes fewer than one million acres available for leasing. All action alternatives would affect large areas of the designated terrestrial-denning unit of critical habitat for polar bears. Additionally, all of the action alternatives assume the entire Coastal Plain will be open to seismic exploration, which by itself would degrade fish and wildlife natural diversity. The current range of alternatives in the DEIS is inadequate in that each of the action alternatives would result in unacceptable impacts to Refuge resources and are inconsistent with Refuge purposes. To address these and other concerns, the following proposed alternatives would have fewer negative effects on fish and wildlife, including avoiding	Neither of the alternatives proposed would meet the various requirements of PL 115-97. The alternatives would not allow for access to the minimum of 400,000 acres of the highest hydrocarbon potential lands available in at least two lease sales (a total of 800,000 acres), even with current technologies using 6-mile directional drilling in ideal geological conditions. Additionally, the Secretary is required to authorize up to 2,000 surface acres for development.

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269. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	substantial effects on polar bears than the action alternatives presented in the DEIS. These proposed alternatives are reasonable, would satisfy the purpose and need and direction in the Tax Act, provide better protection for Refuge resources, and need to be analyzed through appropriate land use planning and NEPA processes. Proposed Alternative W1 Proposed Alternative W1 as depicted in Figure 1 allows for Satellite Well Pads and development area on up to 50 acres in the vicinity of the Canning River. This alternative would also provide for an oil and gas program in the Arctic Refuge Coastal Plain through horizontal and extended reach drilling. A seawater treatment plant, barge landing, and Central Processing Plant would not be permitted on Arctic Refuge lands. NSO stipulations would be non-waivable. Seismic surveys would not be permitted in the areas not available for lease sales. Surface disturbance should be capped at 150 acres. Figure 1. Alternative W1 (Map is enlarged in Appendix A). [See original comment PDF for figure] Proposed Alternative W2 Proposed Alternative W2 limits oil and gas exploration and surface development, with the intent being that development actions do not materially interfere with achieving Coastal Plain surface resource purposes. The locations for Satellite Well Pads under this oil and gas development scenario would be limited to locations within a 50,000-acre area on the western portion of the Coastal Plain. This alternative also provides for an extensive oil and gas program in the Arctic Refuge Coastal Plain through horizontal and extended reach drilling. A seawater treatment plant, barge landing, and Central Processing Plant would not be permitted on Arctic Refuge lands.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
269. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	NSO stipulations would be non-waivable. Seismic surveys would not be permitted in the areas not available for lease sales. Surface disturbance should be capped at 600 acres. This alternative addresses the legislative guidance to have at least two lease sales of at least 400,000 acres of the highest HCP lands within the Coastal Plain, while being subject to protecting the highest quality Polar Bear Critical Habitat. Figure 2 depicts a proposed Alternative W2 that provides for an oil and gas program on the western part of the Coastal Plain with limited surface occupancy. Figure 2. Proposed Alternative W2 (Map is enlarged in Appendix B). [See original comment PDF for figure] Table 1 summarizes lease availability and stipulations for proposed alternatives W1 and W2. Table 1. DEIS Table 2-1 Supplemented. Summary of Lease Stipulations by Alternative. [“.”- delimited table reproduced from original comment PDF, below] Lease Availability/Stipulations:Alt. W1:Alt. W2 Subject to NSO:813,450:763,500 Subject to controlled surface use:50:50,000 Subject only standard terms and conditions:0:0 Total available for lease sales:813,500:813,500 Not offered for lease sales:750,000:750,000	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
270.	Withheld	Withheld	—	72125	33	New alternative proposed	The Tax Act dictates that, “[t]he Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section.” As such, the legislative direction limits BLM’s authority, “to approve, deny, or reasonably condition any proposed on the ground-disturbing activity.” This legislative direction restricts BLM project-level decision space for controlling site-specific actions. To ensure that fish and wildlife conservation and water protection purposes are achieved, development decisions will need to be limited in size and appropriately located such as that envisioned in proposed Alternatives W1 and W2.	Neither of the alternatives proposed would meet the various requirements of PL 115-97. The alternatives would not allow for access to the minimum of 400,000 acres of the highest hydrocarbon potential lands available in at least two lease sales (a total of 800,000 acres), even with current technologies using 6-mile directional drilling in ideal geological conditions. Additionally, the Secretary is required to authorize up to 2,000 surface acres for development.

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271.	Katherine	Trisolini	Loyola Law School	74278	10	New alternative proposed	It is the intent of Congress in this Act to preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered arctic tundra, boreal forest, and coastal rainforest ecosystems; to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities including but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands and on freeflowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems. It is further the intent and purpose of this Act consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded by or pursuant to this Act, to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so. (ANILCA § 3101) Because BLM's responsibility include preservation of these ecological and subsistence values, it must at least examine an alternative that minimizes the project's impact, particularly given that thus far it has come nowhere near to providing an option near the lowest level of spatial disturbance permitted by Congress.	Alternative D2 has been revised to offer 800,000 acres of land available for lease.

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272.	Richard	Edwards	—	74281	14	New alternative proposed	The Draft EIS must be revised to address a full range of alternatives. The lower bound of the Responsible Official's decision-space for action has not been addressed in this defective document. Specifically, this calls for analysis of at least one or both of the following alternatives: a) Alternative E: An alternative that incorporates a lease offering that equals the minimum acreage identified in Section 20001(c)(3) with the most restrictive management practices (800,000 acres). b) Alternative F: An alternative that incorporates a lease offering that meets the intent of the related text in Section 20001(c)(3) with the most restrictive management practices. This alternative would only include acres with high hydrocarbon potential (427,900 acres). At a minimum, BLM must fully analyze these lower bound action alternatives in order to inform the Responsible Official and the public of the consequences of the disconnect between the requirements of Section 20001(c)(3) and BLM's land management principles under FLPMA.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease. Additionally, based off best available information, the action alternatives maximize the areas with the highest HCP; action alternatives balance areas with the highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections).
273.	Richard	Edwards	—	74281	19	New alternative proposed	Additional ROP Needed Under Facility Design and Construction to Address STPs (DEIS, Chapter 2): The existing ROPs do not address any details regarding seawater treatment plants other than a reference to "co-location with other facilities when feasible". The reality is that, other than gravel mines, water provided by these plants is likely to be the most critical limiting factor in support of the proposed development. Proper plant-type selection, site-selection, design, construction and operation are essential to minimize the adverse impacts of these significant support facilities. The Draft EIS must be revised to include an additional ROP that addresses issues related to STPs.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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274.	Heather	Mirczak	—	74303	1	New alternative proposed	Another alternative is to require that all construction activities and drilling are halted during the months of the year when the caribou are calving. As currently written the most restrictive option only halts "major construction activities" - not including drilling - for a single month during caribou calving. The bare minimum I find acceptable is that ALL versions of a lease agreement include a minimum of a single month restricting all construction and drilling activities.	The BLM has included multiple lease stipulations and ROPs to protect migrating caribou and their habitat (e.g., Lease Stipulations 6, 7, 8, and ROP 23). These were developed in collaboration with resource specialists with expertise in caribou behaviors as they relate to oil and gas development to ensure the objectives of the lease stipulations and ROPs are met.
275.	Heather	Mirczak	—	74303	2	New alternative proposed	One alternative is to limit the size of land leases to the 400,000 acre limit. More importantly is to limit the ongoing or expanded capacity of development that could accrue from the 2000 acre surface development limit that excludes ice roads, ice pads, elevated pipelines and gravel mines.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease. Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
276.	Lisa	Baraff	Northern Alaska Environmental Center	74306	2	New alternative proposed	BLM fails to consider a reasonable range of action alternatives as required under NEPA. Alternatives that should be considered and were not include minimized lease acreage, leasing deferrals, alternatives with non-waivable mitigation measures (e.g., stipulations, best management practices, and required operating procedures), and alternatives that prevent future development or only permit contiguous development. None of the action alternatives consider offering less than 1 million acres for leasing, even though each lease sale is only required to be 400,000 acres, for a total of 800,000 acres. Nor do the alternatives consider the likelihood that not all acreage offered for lease will sell and would then be rolled into subsequent sales, resulting in fewer total acres required to meet the stipulation that two lease sales of not less than 400,000 acres each occur within seven years of enactment of the Tax Cuts and Jobs Act of 2017 (P.L. 115-97 Sec. 20001).	Alternative D2 has been revised to include 800,000 acres of land available for lease. Alternatives considered but dismissed from detailed analysis have been added to Section 2.3. Such an alternative (leasing deferrals) would have impacts similar to alternatives already analyzed. The BLM would expect little to no difference in impacts under such an alternative. This is because lands that were offered but not leased in the first sale are unlikely to be leased in a second sale a few years later given that exploration is unlikely to substantially advance during that time period.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
277.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	6	New alternative proposed	4. Include Co-management with Alaska Native Landowners and opportunities for Nativeowned land As an adjacent land owner, it is imperative that KIC be included in BLM's decision-making process and both BLM and Fish & Wildlife Service's (FWS) management of the 1002 Area. KIC's land is bordered by federally management land. This has resulted in restrictions placed on our shareholders' subsistence way of life and access that we strongly oppose. As we evaluate how oil and gas leasing is managed in the Coastal Plain, BLM must consider the unintended impacts their lease stipulations, required operating procedures, and management may impact adjacent Native owned land. KIC is concerned that similar to the barriers on subsistence, the restrictions placed on neighboring federally managed land may act as a blockade to development of Native owned resources. To avoid this outcome, BLM should commit to co-manage areas that are adjacent to Native-owned land, including coastal areas. Further, BLM should clarify that their restrictions, requirements, and stipulations do not apply to Native-owned land, including coastal areas and barriers islands, namely: Tapkaurak Spit, Jago Spit, Bernard Spit, Barter Island, Arey Island, and small unnamed shoals just offshore from west end of private mainland lands. Through close coordination, BLM can manage a responsible leasing program that is considerate of subsistence, our cultural way of life, the unique environment, and our wildlife and cultural resources.	The BLM does not have authority to enter into cooperative agreements for comanagement of surface resources in the Arctic National Wildlife Refuge because they are not BLM public lands under FLPMA 307(b). The BLM has added additional text to Section 1.4.

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278.	Renae	Smith	Counsel for Environmental Protection	74336	10	New alternative proposed	minimum 800,000 acres specified in the Tax Cuts and Jobs Act and limit cumulative surface area development to 2,000 acres, including total acreage of ice roads, gravel mines that supply raw materials for construction of oil and gas facilities, any other surface disturbance indirectly related to or resulting from facility construction and use, as Congress intended. 68 None of the action alternatives in the DEIS satisfy these limits and as a result, any action alternative in the final EIS must be substantially revised before it would be a viable alternative for selection in the record of decision.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease. Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines., Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix..
279.	Eric	Walsh	Government of Canada	74346	3	New alternative proposed	the dEIS did not present the viable and reasonable alternative of leasing the minimum area required in PL 115-97. All of the presented action alternatives (B, C, D1 and D2) propose to lease more than the minimum area (800,000 acres) legislated by Congress.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
280.	Eric	Walsh	Government of Canada	74346	6	New alternative proposed	Section 2.3 (p. 2-39) of the dEIS provides the reasoning for not evaluating an action alternative that limits leasing to 800,000 acres of "those areas that have the highest potential for the discovery of hydrocarbons" (PL 115-97). However, this section of the dEIS provides no support that such an alternative was not feasible. The only reason discussed was that the current designation of hydrocarbon reserve potential in ANWR implies that there is not actually 800,000 acres of "high hydrocarbon potential" in the project area, and that some quantum of medium or low potential area must be leased to reach the total. However, aside from that statement of fact, there is no stated project purpose, identified need, or legal imperative provided to lease more than what the law requires.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.

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281.	Withheld	Withheld	—	75601	3	New alternative proposed	The EIS states that the No Action alternative will not be considered due to the requirement to implement the oil and gas leasing program consistent with PL 115-97. However, the alternative with the least environmental impact – Alternative D – would offer more than 1 million acres for lease, which is still far more area than required by PL 115-97. Alternatives that offer less area for lease, and thus have smaller footprint and correspondingly smaller environmental effect, should be considered.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
282.	Rob	Cadmus	—	80946	1	New alternative proposed	Oil and gas leasing, exploration, and development are not compatible with the original purposes of the refuge, including preserving unique wildlife, wilderness, and recreational values. The alternatives presented do not balance the original purposes for the refuge with the direction given under the new Tax Act. For example, the action alternatives offer much more acreage than required by the Tax Act. Why is this? A wider range of alternatives are necessary to meet the standards set in the National Environmental Protection Act. This should include an alternative that reduces the area of lease sale and establishes higher standards for protection of fish and wildlife.	Alternative D2 has been revised to offer 800,000 acres of land available for lease. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

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283.	Kristine	Benson	—	81668	3	New alternative proposed	The BLM should develop additional alternatives that result in smaller acreages of surface disturbance. The Congressional dictate was for a maximum of 2000 acres, so any smaller amount is allowed and is important to consider. To protect the wildlife and subsistence values of the Refuge, the smallest possible disturbance needs to be given equal consideration with major development alternatives. Develop an alternative with only 500 acres of surface disturbance and another with only 1000 acres. Likewise, in Section 2.3, the BLM attempts to justify the elimination of an alternative that would offer the minimum requirement of 800,000 acres. The rationale for elimination does not make sense. Such an alternative would be substantially different from Alternative D and it should be included in the DEIS. BLM needs to add this alternative to the Draft for public review.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease. Section 20001(c)(3) of the Tax Act states “the Secretary shall authorize up to 2,000 surface acres.” Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.
284.	Roberta	Joseph	Tr’ondek Hwech’in First Nation	81742	3	New alternative proposed	The draft EIS fails to provide a development alternative that meets minimum legal requirements Tr’ondëk Hwëch’in acknowledges that Sec. 20001 of PL 115-97 requires the sale of at least two leases by December 22, 2027, and that these leases must be a minimum of 400,000 acres each in areas with the highest hydrocarbon potential. Therefore, it is unclear why BLM did not provide an alternative which considered leasing only the minimum amount of land legally required under the Tax Act (i.e., 800,000 acres).	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.

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285.	Robin	Stebbins	—	83751	1	New alternative proposed	There is no alternative that addresses the minimum lease area stipulated in PL 115-97, namely two leases of 400,000 acres. Since the legal directive is to manage 1002 lands as the wildlife refuge described in ANILCA 303 (2)(B), there should be an alternative with a lease area of 800,000 acres, and the maximally restrictive NSOs, CSUs, TLs and terms and conditions.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
286.	Amy	Law	Government of Yukon	94076	30	New alternative proposed	The Government of Yukon recommends that a supplemental EIS is prepared which identifies action alternatives to meet, but not exceed, the 800,000 acre minimum lease area required by the Tax Act, Public Law 115-97.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
287.	—	—	Alaska Department of Natural Resources	94102	94	New alternative proposed	Due to the limited data available to potential bidders, BLM must consider the possibility that the additional seismic data may reveal that the highest potential areas are different from what is currently mapped. The BLM must not speculate on where the resource may be located but instead build flexibility for future decision-makers by making the total acreage of the Coastal Plain available for oil and gas leasing	Based off best available information, the action alternatives maximize the areas with the highest HCP; action alternatives balance areas with the highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections).
288.	Kenyon	Meyer	—	94105	23	New alternative proposed	The Final EIS Must Include Additional Alternatives That Are More Protective NEPA requires that an EIS identify the full scope of direct, indirect, and cumulative impacts of a proposed action and determine whether there are less environmentally damaging ways to achieve the project purpose. For the reasons set forth below, the DEIS fails to satisfy these fundamental requirements. In addition to specifying the underlying purpose and need to which the agency is responding, an agency preparing an EIS must rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7. Analysis of impacts on polar bears, recreation, and climate change can be found in Sections 3.3.5, 3.4.6, and 3.2.1, respectively.

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288. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	eliminated from detailed study, briefly discuss the reasons for their having been eliminated. ¹⁴¹ However, the alternatives proposed by the BLM fall short of this standard and as such must be reevaluated entirely. By failing to meaningfully evaluate the alternative's impacts on polar bears, the Refuge recreation, and national climate change, the DEIS fails to provide a meaningful range of alternatives. When preparing an EIS, federal agencies must consider all reasonable alternatives to the proposed action. ¹⁴² The analysis of alternatives is characterized as the heart of the environmental impact statement. ¹⁴³ Documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. ¹⁴⁴ The CEQ regulations direct that an EIS "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." ¹⁴⁵ This requires a "thorough consideration of all appropriate methods of accomplishing the aim of the action" and an "intense consideration of other more ecologically sound courses of action." ¹⁴⁶	(see above)
289.	Jason	Schwartz	Institute for Policy Integrity	94627	1	New alternative proposed	Among the alternatives that BLM should have considered are one or more environmentally-protective development scenarios that would lease only the minimum acreage mandated by the Tax Act, and scenarios that would impose more stringent and cost-benefit justified lease stipulations, timing restrictions, and infrastructure limitations.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.

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290.	Jason	Schwartz	Institute for Policy Integrity	94627	4	New alternative proposed	Given the environmental sensitivities of leasing and development in ANWR's Coastal Plain, BLM should have analyzed an alternative that would offer no more than 800,000 acres total for lease. BLM fails to provide a reasonable explanation for why it did not do so.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
291.	Jason	Schwartz	Institute for Policy Integrity	94627	9	New alternative proposed	delayed leasing alternative-to delay the lease sales even beyond the statutory deadline, to perhaps 15 or 20 years in the future-is also a reasonable alternative for BLM to analyze given that such an alternative could generate more total revenue for the public from higher bids, lower production costs due to technology advances, and higher total royalties given resource price projections (with oil prices expected to rise through 2050, as explained below). NEPA requires consideration of alternatives "that are practical or feasible" and not solely "whether the proponent or applicant likes or is itself capable of carrying out a particular alternative"; in fact, "[a]n alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable."	PL 115-97 does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain. The act also requires a lease sale within 4 years. Delayed leasing is an alternative considered but dismissed from further analysis because it would be outside the legal mandate of PL 115-97 (see Section 2.3).
292.	Jason	Schwartz	Institute for Policy Integrity	94627	9	New alternative proposed	Moreover, BLM should also analyze an alternative that would place strict conditions on any future development of leases, such as delaying all development by any lease holders until more information on environmental, social, and economic uncertainties can be obtained, and placing stringent limitations on surface disturbance.	Delayed leasing is an alternative considered but dismissed from further analysis because it would be outside the legal mandate of PL 115-97 (see Section 2.3). Site-specific restrictions and analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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293.	Jason	Schwartz	Institute for Policy Integrity	94627	10	New alternative proposed	It is unreasonable to BLM to base its entire analysis across all alternatives on an assumption of continuing favorable prices, when a framework exists-option value- to consider the value of waiting for more information in the face of great uncertainty over market prices. BLM can and should consider these price uncertainties by considering an option value alternative.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.
294.	Harry K.	Brower Jr.	North Slope Borough	95612	36	New alternative proposed	BLM should include an ROP requiring oil and gas operators to use firefighting foam that does not contain PFAS chemicals.	The BLM has added additional text to ROP 2.
295.	Brook	Brisson	Trustees for Alaska	96981	31	New alternative proposed	The range of alternatives included in the analysis is also inadequate to facilitate informed decision making and public involvement. For instance, the range of alternatives does not include an alternative that makes fewer than 1 million acres available for leasing despite the fact that only 400,000 acres is required by law to be offered in each lease sale. Arctic lease sale experience counsels that much of the area offered is not ultimately bid on or leased, providing for consideration of a phased approach that re-offers unbid lands.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
296.	Brook	Brisson	Trustees for Alaska	96981	32	New alternative proposed	Additionally, there is no alternative that caps surface infrastructure at fewer than 2,000 acres.	Section 2001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act. This alternative has been included in Section 2.3, Alternatives Considered but Dismissed From Further Analysis.

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297.	Brook	Brisson	Trustees for Alaska	96981	44	New alternative proposed	Relatedly, BLM assumes that the focus of development will occur in the Topset Play, which is expected to be the first anchor field discovered, 156 and which BLM states contains "over half of the recoverable undiscovered oil in the program area." 157 BLM should consider an alternative that looks specifically at leasing and development focused in this area, including considering leasing approaches and protective measures in this geographic focus. (BLM should include a map of the location of this play, given its significance.)	The Topset Play influenced how the high and medium HCP areas were defined. These areas were considered first for leasing under all action alternatives, while still balancing resource protections. The BLM has added a map to Appendix B that depicts this.
298.	Brook	Brisson	Trustees for Alaska	96981	45	New alternative proposed	BLM should also consider an alternative in which there is no central processing facility, production pads, gravel mines or other infrastructure constructed on the Coastal Plain. Oil and gas resources could be produced and/or transported via pipeline for processing at another location and gravel mining could occur outside of the Coastal Plain. Such an alternative could decrease impacts to surface resources on the Coastal Plain by limiting construction and human activity associated with oil and gas development processing.	PL 115-97 requires that the BLM implement an oil and gas leasing program within the Coastal Plain and authorize ROWs for essential roads and pipeline crossings. It would not be practicable to have an oil and gas program without the necessary oil and gas infrastructure.
299.	Brook	Brisson	Trustees for Alaska	96981	47	New alternative proposed	BLM should also consider an alternative where all lease stipulations and required operating procedures (ROPs) are not subject to waivers, exceptions, and modifications. This alternative would ensure that the protections ascribed to the stipulations could actually be relied upon to safeguard resources.	This alternative has been included in Section 2.3, Alternatives Considered but Dismissed From Further Analysis.

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300.	Brook	Brisson	Trustees for Alaska	96981	48	New alternative proposed	Conversely, since all stipulations and ROPs can be waived, excepted, or modified, BLM should analyze the impacts of the program based on granting these exemptions.	Not all stipulations can be waived, excepted, and/or modified. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. There are minimal standards that have to be adhered to in the lease stipulations and ROPs in order to still meet the objective.
301.	Brook	Brisson	Trustees for Alaska	96981	49	New alternative proposed	For instance, BLM should develop an alternative that encompasses the recommendations of the International Porcupine Caribou Board, as required under the International Agreement on the Conservation of the Porcupine Caribou Herd, and another designed to avoid or minimize aesthetic impacts based on the results of comprehensive visibility analysis. BLM should also consider a stipulation requiring compact siting of all oil and gas facilities and infrastructure, and mandating that any development be contiguous, even under the 2,000-acre limitation.	The BLM is complying with international agreements between the U.S. and Canadian governments. Section 1.9 (page 1-5 of the Draft EIS) talks about the 1987 International Agreement on the Conservation of the PCH. The objective of ROP 21 is to minimize impacts of the development footprint.
302.	Brook	Brisson	Trustees for Alaska	96981	50	New alternative proposed	Although the Tax Act directs BLM as to when lease sales should occur and the acreage to be offered in those sales, it does not mandate that leases be issued, nor does it limit what protective stipulations may be applied to the leases, or the timing of production. Consequently, BLM could and should have considered alternatives that would delay leasing or constrain the timing of extraction to reduce or eliminate the impact of the oil and gas program on climate change and account for principles of option or informational value.	Delayed leasing is an alternative considered but dismissed from further analysis because it would be outside the legal mandate of PL 115-97 (see Section 2.3).

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303.	Brook	Brisson	Trustees for Alaska	96981	54	New alternative proposed	BLM also should consider an alternative to delay leasing and/or lease implementation, based on applying the principles of option value or informational value, which provides for BLM to look at the benefits of delaying irreversible decisions. It is well-established that issuance of an oil and gas lease can be an irreversible commitment of resources. ¹⁶¹ In the context of the Coastal Plain, there are significant considerations that would support delaying.	Delayed leasing is an alternative considered but dismissed from further analysis because it would be outside the legal mandate of PL 115-97 (see Section 2.3).
304.	Withheld	Withheld	—	97253	3	New alternative proposed	BLM should consider an alternative that leases only the minimum 400,000 acres to provide a fair comparison of the options.	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
305.	Ronald	Yarnell	—	98123	5	New alternative proposed	One of the things that I noticed looking through the maps and the alternatives is you are opening up areas not only of high potential -- only a third of the 1002 area or less is of high potential petroleum province. The rest is moderate or low potential. I think the law says that you have to open up 400,000 acres within, whatever it was, four years or something like that. And then you had to open up another 400,000 acres by 2025 or something. There should definitely be an alternative in here that opens up only the minimum necessary, the 400,000 acres. And that should be the western -- if -- Okay. I'm saying this under protest because I don't think any of the coastal plain, any of the 1002 area should be opened up for seismic testing or exploration. But if you are going to open any of it up, you should do the absolute minimum the law requires, the 400,000 acres, of which that would be most of the high potential oil province.	Alternative D2 has been modified to offer 800,000 acres for leasing. Based off best available information, the action alternatives maximize the areas with the highest HCP while balancing with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included (while balancing resource protections).

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306.	Brook	Brisson	Trustees for Alaska	98270	110	New alternative proposed	This will necessarily require the development and analysis of alternatives designed to better protect the Coastal Plain's world-class recreational values - which are dependent on the area's natural, untouched landscape. Such alternatives might include, for instance: concentrating and strictly limiting leasing and development to certain lower-impact areas identified through a visibility analysis and careful examination of recreational use data; or including non-waivable stipulations for extensive NSO setbacks around river corridors, height restrictions on infrastructure, mandatory photo simulations of proposed facilities to inform future visual resource assessments, timing limitations during popular recreational months, mandatory development of monitoring and conflict avoidance plans in coordination with recreational groups, guides, and pilots, and other measures designed mitigate aesthetic and other impacts to recreation settings and opportunities.	Alternatives considered but dismissed from detailed analysis (e.g., an alternative with non-waivable stipulations) have been added to Section 2.3. Requirements for mandatory photography simulations, recreation-focused timing limitations, and stipulations related to height restrictions on infrastructure are highly speculative due to the lack of specificity of what, where, and when development may occur. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
307.	Brook	Brisson	Trustees for Alaska	98270	224	New alternative proposed	BLM should also consider a health-focused mitigation measure. BLM should adopt a measure that provides for health-focused coordination with communities, similar to what was done in ROP 36 for subsistence. ²⁰⁷⁹ Because Kaktovik data are limited and not publicly available, it is critical that such a mitigation measure requires the establishment of appropriate baseline data.	The BLM has responsibilities related to subsistence management and no such authorities related to health-focused mitigation. Section 3.4.11 (public health and safety) states, "HIAs are expected to be developed for future development projects that would require additional NEPA analysis."

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308.	Brook	Brisson	Trustees for Alaska	98271	20	New alternative proposed	None of the action alternatives appear to prohibit water withdrawals or excavation of gravel mines for any lands in the program area, whether available for leasing or not, nor for areas subject to No Surface Occupancy. Gravel mines and water withdrawal operations in their entirety should be considered prohibited from areas not available for leasing and also in No Surface Occupancy zones during any season because they alter hydrological flows, impair water quality, and alter natural fisheries diversity as well as riparian and stream bank vegetation. Seismic operations would also have impacts on hydrological and water resources, and should not be allowed under any alternative in the areas unavailable for leasing or subject to No Surface Occupancy.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations.

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309.	Withheld	Withheld	—	48642	1	Suggestion for specific change to an alternative	Required Operating Procedure 23 f. Before the construction of permanent facilities is authorized (limited as they may be by restricted surface occupancy areas established in other lease stipulations), the lessee would design and implement and report a study of caribou movement, unless an acceptable study specific to the PCH and CAH has been completed within the last 10 years and approved by the BLM Authorized Officer. How will this study be used? There are already studies of caribou movement that show herds moving freely through this area and use as a critical habitat. Is that not enough to halt development? g. A vehicle use management plan would be developed by the lessee/operator/contractor and approved by the BLM Authorized Officer, in consultation with the appropriate federal, State, and NSB regulatory and resource agencies. The management plan would minimize or mitigate displacement during calving and would avoid, to the extent feasible, delays to caribou movements and vehicle collisions during the midsummer insect season, with traffic management following industry practices. Exactly how will the management plan accomplish this?	All studies required by lease stipulations and ROPs (including the caribou movement study noted under ROP 23 [section f]) will be used to inform future decision-making by the BLM for oil and gas activities within the Coastal Plain. The vehicle management plan noted under ROP 23 (section g) would not be approved by the BLM Authorized Officer unless it demonstrates it is designed to meet the objectives of minimizing or mitigating displacement of caribou.

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310.	Withheld	Withheld	—	55252	6	Suggestion for specific change to an alternative	The Alternatives and their alleged impacts rely, in part, on Required Operating Procedures (ROP). This DEIS should, but does not, explain the penalties for violating ROPs. How will the ROPs be enforced? How will they be monitored? The public and decisions-makers needs to know the answers to these questions in order to assess whether these ROPs provide any kind of meaningful environmental protections. Will they really deter certain corporate behaviors? What kind of penalties have been imposed in the past for violations of similar ROPS, and with what frequency? Given the environmental significance of the Coastal Plain of the Arctic National Wildlife Refuge, will there be additional monitoring and greater penalties for violating ROPs? If so, what will this involve? To meet NEPA, these questions need to be addressed in the EIS.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.
311.	Paul	Reichardt	—	55513	3	Suggestion for specific change to an alternative	would like to see an Alternative D3 with an 800,000 acre limit	Alternative D2 has been revised to offer 800,000 acres of lands available for lease.
312.	Kathryn	Tilly	—	55683	2	Suggestion for specific change to an alternative	the draft EIS does quantify or describe mitigation measures for air and water pollution that would be generated by oil and gas drilling in the area.	Lease stipulations and ROPS designed to protect non-water resources may also provide protections for water resources. ROPs 5 and 6 describe mitigation measures focused on air resources. ROPs 2 (section d) and 9 provide protections at the leasing stage for water quantity and quality. A determination of additional mitigation measures for air and water pollution cannot be made until site-specific development activities are proposed.

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313.	Tim	Mayer	—	56678	4	Suggestion for specific change to an alternative	(pg 2-4 to 2-15) The ROPs presented in the DEIS do not consider impacts to water quantity under any of the alternatives. The ROPs are primarily stipulations on setbacks for oil and gas infrastructure. While these are important and necessary, they do not address the most substantive impacts to water quantity and they do not adequately address or protect the “necessary water quantity within the refuge” as stated in the refuge purposes. The DEIS and ROPs need to identify sources and quantities of water available for leasing and exploratory activities. The CRS study (2003) stated that only 8 lakes in the 1002 Area contained enough unfrozen water to build a mile or more of ice road and most of the rivers in the area were too shallow or too brackish to use. Furthermore, the lakes in the 1002 Area are not distributed evenly throughout the area, but are concentrated mainly near the Canning river, meaning water would need to be transported to other areas (FWS, 1996). This suggests there are some serious constraints on the location and availability of water, which need to be identified or discussed in the DEIS. If there is newer information or technology that counters this, it needs to be included in the DEIS as well.	A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed. In addition, lease stipulations and ROPs designed to protect non-water resources may also provide protections for water resources.
314.	Withheld	Withheld	IRIS USArray	57852	3	Suggestion for specific change to an alternative	Recommended mitigation activities might include an ongoing program to monitor seismicity in conjunction with injection pressure records providing data that are open to the public. Sharing commercially developed seismic imaging of depths greater than, say, 4km, might identify faults prone to earthquakes to further delineate regions which should be cautious about injection.	Fluid injection-induced seismicity is addressed under Direct and Indirect Impacts in Section 3.2.5, Geology and Minerals. Sharing of monitoring data (if appropriate) would be initiated by the relevant authorities.

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315.	Withheld	Withheld	—	59376	12	Suggestion for specific change to an alternative	Could you integrate a bottom line assessment of the effectiveness of the proposed lease stipulations and operating procedures (qualitative or quantitative), based on past similar projects, to help reader understand whether any of these many measures would be effective?	A qualitative and quantitative analysis of the effectiveness of the lease stipulations and ROPs can be found in Chapter 3. To ensure effective mitigation measures were included in the alternatives, lease stipulations and ROPs were developed with cooperating agencies and resource experts knowledgeable in oil and gas development and activities. Many of the lease stipulations and ROPs are currently being used across the North Slope; they were modified as appropriate for the Coastal Plain, as determined by the resource experts.
316.	Eric	Biber	—	68365	2	Suggestion for specific change to an alternative	Operations should be restricted to periods when no disturbance of any kind would occur to existing polar bear and caribou populations.	Timing limitations were developed using best available science in conjunction with review by cooperating agencies and resource experts to minimize disturbance on polar bear and caribou populations.
317.	Withheld	Withheld	—	68965	12	Suggestion for specific change to an alternative	I recommend major revision and re-release of a revised draft EIS that has: *A system for tracking and disclosing surface disturbance acres	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
318.	Withheld	Withheld	—	68965	21	Suggestion for specific change to an alternative	The range of alternatives is also inadequate because alternatives were developed with a strong and appropriate focus on caribou summer habitat, but little apparent regard for the wide range of other important resource issues identified during scoping. In particular, the currently proposed action alternatives do not adequately address the program's adverse effects on subsistence use and environmental justice.	Lease stipulations and ROPs designed to protect specific resources may also provide protections for many other resources. For example, an objective of Lease Stipulation 1 is designed to minimize impacts on subsistence uses and activities, while also providing protections for many other resources, including water quality, cultural resources, and fish and wildlife habitat.

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319.	Withheld	Withheld	—	68965	26	Suggestion for specific change to an alternative	Regarding unconstrained exemptions, most of the lease stipulations in the action alternatives provide opportunities for the stipulation to be circumvented after further review of proposed case-by-case exemptions. Similarly, nearly all ROPs included in Table 2-2 include some sort of exemption provision that grants the BLM Authorized Officer the discretion to circumvent the requirement/standard and potentially jeopardize meeting the objectives of that ROP. I understand the need for an exemption process from the perspective of practical implementation of the program. But clear disclosure of the standards that must be met in order for an exemption to be granted is needed to reduce uncertainty about whether lease stipulations and ROP will in fact be implemented. The appearance or broad discretion to grant exemptions introduces considerable uncertainty surrounding the implementation fidelity and effectiveness of ROPs in limiting impacts, especially given the lack of emphasis of monitoring in the draft EIS. Please amend all Lease Stipulations and ROPs that include delegated discretionary authority to the BLM Authorized Officer with statements that describe, in as much detail as possible, the sideboards and limits on the Officer's discretion. Please develop and include in the draft EIS a process for public notification and involvement in the process of approving all non-emergency cases in which the BLM Authorized Officer is considering an exemption from any Lease Stipulation or ROP. Clearly, the BLM Authorized Officer will have great responsibility for the proper implementation of this program. Arguably, this Officer may have too much responsibility. To	Chapter 2 has been revised to clarify the waiver, exception, modification process, which includes a public notification process if appropriate. 43 CFR 3590.2 identifies the responsibility of the Authorized Officer. BLM Authorized Officers received their authorities through the delegation process within the agency.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
319. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	reduce the potential for arbitrary or capricious exemptions, please provide in the revised draft EIS clear evidentiary and practical standards that would need to be met in order for a request for an exemption from a Lease Stipulation or an ROP to be considered warranted. These criteria would be useful for both lease applicants and would provide assurances to entities interested in environmental protection. Please also develop and include in the revised draft EIS a process for engaging a local oversight committee and panels of technical experts to provide recommendations to the BLM Authorized Officer regarding exemptions, as well as subsequent plans (see below). This local and technical input will improve decisions made by the BLM Authorized Officer and will help to reduce uncertainty surrounding the implementation process for Lease Stipulations and ROPs. Finally, given the important role of the BLM Authorized Officer in implementing this oil and gas program, please add to the introduction to Chapter 2 a clear and thorough explanation of the qualifications that make candidates eligible to serve as the BLM Authorized Officer.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
320.	Withheld	Withheld	—	68965	27	Suggestion for specific change to an alternative	Regarding excessive reliance on subsequent planning efforts to minimize environmental impacts, the draft EIS calls for the subsequent development, review, and refinement of many management, mitigation, and resource protection plans. The draft EIS, however, does not describe who will create these plans or how the public might be involved in their development. These plans will play an important role in the day-to-day protection of natural, cultural, and social resources during implementation of the oil and gas program. The draft EIS needs to include assurances that these plans will include best-available measures, effective remedies, and meaningful penalties for non-compliance. Please include in the revised draft EIS a thorough description of the process for developing, approving, and implementing subsequent management, mitigation, and resource protection plans. This description should include who will be involved in developing these plans and the opportunities for public involvement that will be provided. Again, I recommend including in this process explicit mechanisms for gaining input from scientific societies with expertise in the respective disciplines covered in different plans. Involvement of scientific societies as collaborators in plan development or as peer reviewers could enhance inclusion of best available information and technology in these plans. I also recommend specifying which regulatory agencies will be invited to participate in development of each plan, and which of these agencies must be involved in order to develop an effective plan.	Where subsequent plans are required through the lease stipulations and ROPs, the BLM Authorized Officer's approval is contingent on appropriate coordination (see footnote 1, Table 2-3 of the Final EIS). The operator is to develop these plans.

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321.	Withheld	Withheld	—	68965	28	Suggestion for specific change to an alternative	Regarding monitoring and compliance, this is another essential tool for providing assurances that the program will be implemented as described. A robust program of implementation and effectiveness monitoring, reporting, and ongoing adaptive management of the program will be critical to ensuring that non-compliance is detected early and effective remedies are promptly implemented. The current draft EIS mentions subsequent development of monitoring and compliance plans, but provides no details about this process. I understand that the current programmatic draft EIS is not the place for articulating a detailed monitoring and compliance plan. But I recommend incorporating in the revised draft EIS an appendix that provides a description of the basic content of appropriate monitoring plans, with outlines and examples whenever possible. As I recommended for management, mitigation, and resource protection plans above, this description of monitoring and compliance plans should include who will be involved in developing these plans and the opportunities for public involvement that will be provided. Again, I recommend including in this process explicit mechanisms for gaining input from scientific societies and regulatory agencies with expertise in the respective disciplines covered in different monitoring and compliance plans. All of the plans discussed here require funding adequate to develop, refine, and implement them. In the case of monitoring and compliance plans, funding needs to include salary for staff to develop and carry out all aspects of the monitoring program. Funding for staff should include enforcement officers, operating in the field, who are charged with ensuring	Monitoring plans will be tailored to the specific location of development and resources or activity being monitored; it is not practicable to develop a template that would cover all resources, activities, and requirements for this EIS. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).

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321. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	environmental compliance with the EIS and all subsequent management, mitigation, and resource protection plans. Presence of field-going enforcement staff is central to maximizing both the opportunity to coordinate with program operations staff to find creative solutions, and to increase the potential to detect and remedy non-compliance in a timely and effective way. I recommend that the pre-disturbance bond be used to guarantee adequate funding for the monitoring and compliance program. (Participating in the development, implementation, and monitoring of these plans will constitute a considerable workload for responsible staff within the BLM, but also the USFWS, NMFS and other regulatory agencies. Although not necessarily a topic for the draft EIS, I recommend careful consideration of the increased workload associated with administering this oil and gas program and beginning the process of hiring the additional manpower needed to ensure the planning and regulatory compliance aspects of this program are completed in a competent and timely manner (please see my specific comment 69 below for additional suggestions).)	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
322.	Withheld	Withheld	—	68965	31	Suggestion for specific change to an alternative	6. Weak or missing scientific support for design criteria in action alternatives. Many of the lease stipulations and required operating procedures in the draft EIS's action alternatives include numeric criteria, which is desirable from the perspective of monitoring and compliance. Most of these numeric criteria, however, are not supported with citations, a clear and logical rationale, or other evidence of a scientific basis or a history of implementation effectiveness. This leaves the impression that these numeric criteria are arbitrary and potentially ineffective. Please be explicit and transparent about the scientific basis underlying all numeric criteria and clearly identify when criteria are based on best professional judgement or a similar standard. For example, in Lease Stipulation 1, what is the scientific basis for the setback distances specified, and why are they applied only to surface occupancy and not other activities? What evidence supports these distances being effective for meeting Stipulation 1's objective? For criteria based on best professional judgement, please also provide a narrative rationale explaining why each criterion could be expected to meet the objectives for which it was specified.	If lease stipulations or ROPs apply to multiple resources, regardless of objective, the benefits or detriments associated with that objective will be analyzed. Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas.
323.	Withheld	Withheld	—	68965	35	Suggestion for specific change to an alternative	9. Table 2-2, page 2-4. Alternative D includes in its objective, "impacts on hunting and recreation; and impacts on scenic and other resource values." Presumably this was intended to mean, minimize impacts on hunting and recreation; and minimize impacts on scenic and other resource values. Please clarify. If in fact the objective of this alternative is to minimize impacts on these resources, increasing setbacks by the proposed amounts is unlikely to achieve this objective. On	No text changes; the intent is to minimize impacts on the specific resources. Additionally, setbacks were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas.

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323. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the flat terrain of the coastal plain, with low-growing vegetation, increasing setbacks by one or two miles will slightly reduce impacts to these resources, but impacts will still be considerable. The specified setbacks appear to be arbitrarily selected. What is the scientific rationale supporting the proposed setbacks? To effectively achieve an objective of minimizing impacts on hunting, recreation, and scenic resources, setbacks should be determined based on scientifically supported setback distances for these activities in similar environments. At a minimum, setbacks based on the visual and auditory features of the proposed development in the coastal plain could be devised analytically. For example, regarding visual impacts, including artificial lighting, the geographic range associated with the expected height of oil and gas program infrastructure could be used to calculate setbacks that would shield hunters and recreationist from views of program infrastructure. Similarly, for audible disturbance, the distance at which the noises generated by oil and gas development activities attenuate to ambient levels in still, cold air could be calculated. The noises likely to have the greatest sound pressure levels could be analyzed, including blasting, seismic testing, noise generated by aircraft and watercraft, as well as motorized ground-based equipment used for all prospecting, construction, and operations and maintenance activities. Following such an analysis, setback distances could be established that would alleviate impacts from the majority of visual and auditory stimuli.	(see above)

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324.	Withheld	Withheld	—	68965	36	Suggestion for specific change to an alternative	Finally, setbacks in lease stipulation 1 are defined from the active floodplain (defined as “The flat area along a water body where sediments are deposited by seasonal or annual flooding; generally demarcated by a visible high water mark. Coastal plain rivers are very dynamic through time in their floodplains. Leases may be active for relatively long periods of time (i.e., greater than 20 years). In this context, consider specifying that any setbacks from the listed floodplain rivers begin at the edge of the historic floodplain as defined by historic channel scars detected using LIDAR (light detection and ranging) or other means. The geomorphic criteria for recognizing the historic floodplain is typically the presence of terraces at the edges of the geomorphic floodplain. Consider replacing references to the “active floodplain” in Alternative D with “historic floodplain.”	The term “active floodplain” is commonly used and more straightforward to define on the landscape.
325.	Withheld	Withheld	—	68965	37	Suggestion for specific change to an alternative	10. Table 2-2, ROP 1, page 2-16. Consider revising the Requirement/Standard to read: Areas of operation would be left clean of all debris at all times. This change would reduce the potential for debris or trash accumulations to develop that attract wildlife and produce a negative visual impact.	The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2.
326.	Withheld	Withheld	—	68965	39	Suggestion for specific change to an alternative	12. Table 2-2, ROP 6, pages 2-17 to 2-18. The objective of this ROP includes prevention of undue or unnecessary degradation of the lands affected by oil and gas development. There appears to be an error of omission in that no applicable requirements/standards are given. The standards presented in Table 2-2 under this ROP appear to be associated with ROP 5.	Requirements and standards for ROP 6 are included on page 2-18 in the Draft EIS.

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327.	Withheld	Withheld	—	68965	41	Suggestion for specific change to an alternative	13. Table 2-2, ROP 7, page 2-19. ROP 7 is about human health risks associated with contaminants in subsistence foods. The requirement/standard currently includes the following: "the BLM Authorized Officer may require changes in the operator's processes to reduce or eliminate emissions of the contaminant." Consider revising as follows; to reduce or eliminate emissions of the contaminant, including cessation of all operations at facilities producing the contaminants in question. After appropriate studies are completed, the remedies available to the BLM Authorized Officer to protect human health should be broad, decisive, and effective.	The BLM Authorized Officer has the discretion to require or authorize changes in operator activity if that activity does not meet the stated objectives.
328.	Withheld	Withheld	—	68965	42	Suggestion for specific change to an alternative	14. Table 2-2, ROPs 8 and 9, pages 2-19 to 2-20. ROPs 8 and 9 are about water use. Please add a requirement/standard specifying all water withdrawal methods employed on waterbodies found suitable for Wild and Scenic status according to the ANWR CCP must be conducted in ways that are consistent with Wild and Scenic status.	Where practicable and where actions do not conflict with PL 115-97, lease stipulations and ROPs are designed to protect Wild and Scenic River characteristics on rivers determined to be suitable.
329.	Withheld	Withheld	—	68965	44	Suggestion for specific change to an alternative	15. Table 2-2, ROP 10, pages 2-20 to 2-21. ROP 10 is about winter overland moves and seismic work. Alternative D, item (b) under this ROP specifies that a survey of polar bear dens and seal birthing lairs should be conducted before winter overland moves and seismic work. It does not specify, however, how the results of these surveys would be used. Please include a detailed procedure that clearly indicates how specific survey results may prompt specific changes in operation, potentially including delay of the proposed activity, deferral to subsequent winter seasons, or denial or cancellation of the proposed activity.	The survey is developed in consultation with the USFWS and NMFS. As a result of the consultation, measures would be developed to avoid and minimize impacts in accordance with the Endangered Species Act and MMPA.

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330.	Withheld	Withheld	—	68965	45	Suggestion for specific change to an alternative	16. Table 2-2, ROPs 16 and 17, pages 2-24 to 2-25. These ROPs deal with exploratory drilling. The only requirements/standards offered here are concerned with exploratory drilling in streams and construction of temporary roads. Please supplement these ROPs with an explicit statement that cross references all of the other ROPs which also apply to exploratory drilling activities. Please also be explicit about how acres affected by exploratory drilling will be included in the accounting toward the 2,000 acre limit on ground disturbance.	ROPs are designed to mitigate for impacts associated with all phases of the leasing program, unless explicitly stated otherwise. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit.
331.	Withheld	Withheld	—	68965	46	Suggestion for specific change to an alternative	17. Table 2-2, ROPs 19 and 28. Both ROPs refer to permanent features of the oil and gas program. For example, ROP 19 refers to "permanent [italics added] oil and gas facilities, including roads, airstrips, and pipelines." Does the proposed action analyzed in this draft EIS contemplate permanent infrastructure, or is all of it subject to removal at the end of the lease period, with subsequent rehabilitation of disturbed areas. Is the assumed 70-year production timeline or the 130-year timeline to abandonment in Appendix B considered "permanent." Please clarify.	ROP 35 identifies requirements for returning land to its previous condition and use, which would include oil and gas infrastructure. See the definition of permanent oil and gas facilities in the glossary.
332.	Withheld	Withheld	—	68965	47	Suggestion for specific change to an alternative	18. Table 2-2, ROP 30, pages 2-29 to 2-30. Allowing up to 100 cubic yards of material to be removed from rock outcrops with evidence of raptor nesting is not an effective way to minimize loss of nesting habitat for cliff nesting raptors (the objective of this ROP). Please revise this standard to prohibit removal of any materials from outcrops with evidence of raptor nesting.	The BLM has edited text of this ROP for clarity.

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333.	Withheld	Withheld	—	68965	48	Suggestion for specific change to an alternative	The spatial information required in this ROP [ROP 33] as stated represents a solid starting point. The specific role, however, of the requested information in an integrated and comprehensive monitoring program is unclear. What specific questions or performance measures will this spatial data be used to address? How will the results of monitoring be used in ongoing modification and adaptive management of the oil and gas program? As indicated in my general comment, a comprehensive monitoring and compliance plan is perhaps the most important program element that will be the subject of a subsequent planning effort. The revised draft EIS should include more details about the likely structure and content of this monitoring plan that is based on examples of effective monitoring plans that have been implemented successfully in similar contexts.	The need for additional monitoring and/or studies will be determined at the project-specific level. ROP 33 does not preclude the BLM from requiring additional monitoring based on future NEPA analysis and site-specific authorizations.
334.	Withheld	Withheld	—	68965	49	Suggestion for specific change to an alternative	20. Table 2-2, ROP 35, page 2-32. Consider amending the requirement/standard to include gravel mines. Regardless of whether or not these features are counted toward the 2,000-acre facility limit, the ability of areas used as gravel mines to fulfill their previous ecological and hydrological functions could be accelerated by proper reclamation.	ROP 24 addresses the reclamation of gravel mines.
335.	Withheld	Withheld	—	68965	51	Suggestion for specific change to an alternative	22. Table 2-2, ROP 41, page 2-35. Regarding summer vehicle tundra access, consider including in this requirement/standard explicit cross references to other lease stipulations and ROPs that limit access. Be as explicit as possible about the limits on the discretion of the BLM Authorized Officer to grant summer vehicle tundra access (see general comment (4) above).	Lease stipulations and ROPs designed to protect a specific resources may also provide protections for additional resources.

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336.	Withheld	Withheld	—	68965	74	Suggestion for specific change to an alternative	44. Chapter 3; section 3.3.3 (Birds), page 3-102. Consider developing an ROP or timing limitation developed expressly for the purpose of reducing program impacts on staging snow geese. At minimum, this ROP could be incorporated into alternative D or some other appropriate least environmentally damaging practicable alternative developed in response to comments	Text has been added to ROP 34.
337.	Withheld	Withheld	—	68965	78	Suggestion for specific change to an alternative	49. Chapter 3; section 3.3.4, page 3-116. Terrestrial Mammals. Most program-related aircraft operators would maintain minimum flight altitudes to reduce disturbance of wildlife and subsistence hunters. Lease Stipulation 7 and ROP 34 are a useful start, but rather than rely on voluntary compliance or an aircraft use plan to be developed subsequently, please consider elaborating ROP 34 to specify timing limitations and minimum requirements for altitudes and flightlines that would be effective at minimizing disturbance to caribou and other bird and wildlife species. Include this ROP, at minimum, in Alternative D and an appropriate least environmentally damaging practicable alternative developed in response to comments	ROP 34a requires submittal of an aircraft use plan that would analyze impacts from these specific activities. Review of this plan by tribes or ANCSA corporations could allow for additional up-front mitigations. LEDPA is a requirement of the EPA Section 404b1 guidelines under the CWA, and is not applicable to this EIS.
338.	Withheld	Withheld	—	68965	81	Suggestion for specific change to an alternative	53. Chapter 3; section 3.3.5, page 3-129. Marine Mammals. Consider developing an ROP that requires use of best available sensing and modeling approaches to survey polar bear habitat before seismic exploration or other potentially disturbing activities. Include this ROP, at minimum, in Alternative D and an appropriate least environmentally damaging practicable alternative developed in response to comments	All operators will be subject to regulations and stipulations under the ESA and MMPA. LEDPA is a requirement of the EPA Section 404b1 guidelines under the CWA, and is not applicable to this EIS.

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339.	Withheld	Withheld	—	68965	91	Suggestion for specific change to an alternative	64. Chapter 3; section 3.4.6, page 3-205. Recreation. Protective measures that prevent the placement of aboveground infrastructure or that specify the use of downcast lighting or other light trespass mitigation measures would minimize impacts on the quality of nighttime recreation. I agree that such measures could be effective at reducing impacts of artificial light, but no such mitigation measures are included in the action alternatives. Consider including ROPs regarding artificial lighting that are consistent with International Dark Sky guidelines. At minimum, all program lighting should: *Only be on when needed, *Only light the area that needs it, *Be no brighter than necessary, *Minimize blue light emissions, *Be fully shielded (pointing downward).	ROP 26 addresses lighting restrictions. Additional lighting restrictions would be identified during project-specific authorizations to ensure that requirements do not conflict with one another (e.g., International Dark Sky guidelines and Polar Bear Interaction Plan requirements).
340.	Peter	Stern	—	69296	13	Suggestion for specific change to an alternative	Page 2-11 Alternative D BLM officer only consults with NSB and Kaktovik people in possibly altering restrictions to construction activity during calving. Excluding Native Village of Venetie Tribal Gov't is wrong.	The BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.
341.	Peter	Stern	—	69296	14	Suggestion for specific change to an alternative	Page 2-19 Water use does not identify sources of water to be used in exploration or development drilling. There is very little surface water in this area of the slope so using lakes as sources could be a VERY negative impact.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
342.	Peter	Stern	—	69296	15	Suggestion for specific change to an alternative	Page 2-27 There are no standards mentioned in what caribou studies required of the lessee would consist of if no gov't studies have been conducted within 10 years.	Studies would focus on caribou movement as described in ROP 23 (section f).

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343.	Peter	Stern	—	69296	16	Suggestion for specific change to an alternative	Page 2-29 ROP 29. There is not requirement that tribes be consulted in studying cultural and paleontological issues in an area by the lessor/operator/contractor. This is wrong.	The BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.
344.	Peter	Stern	—	69296	18	Suggestion for specific change to an alternative	Page 2-26 ROP 36 Subsistence Consultation for Permitted Activities. Subsections a, b, c and d. This section is terrible. "Native Village of Kaktovik, NSB, and the North Slope and Eastern Interior Alaska Subsistence Regional Advisory Councils" are listed as consulting bodies. BLM is using a gov't to gov't relationship for this type of consultation. The Eastern Interior Alaska Subsistence Advisory Council is really an advisory board to the Federal Subsistence Board not a policy making board. There is 1 person from Ft Yukon on the council. Arctic Village and Venetie with the most interest in this issue are excluded. This is flat wrong. at the very least the Native Village of Venetie Tribal Gov't should be the representative agency as they would be a gov't to gov't agency in the same as the NSB and are indicated as much by ES-5 and section 1.7.2. Subsection e shows gov't to gov't consultation with The Alaska Eskimo Whaling Commission and the NSB as well as local whaling captains. This level of consultation supports the reason why the Native Village of Venetie tribal gov't should be included in subsections a, b, c and d.	Subsections a, b, c, and d apply to "affected communities," which would be determined through NEPA analysis associated with future site-specific oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.
345.	Peter	Stern	—	69296	19	Suggestion for specific change to an alternative	Page 2-34 ROP 39 Native Village of Venetie Tribal Gov't should be included.	ROP 39 applies to a future, specific lease within the Coastal Plain. Footnote 1, Table 2-3 in the Final EIS requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.

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346.	Peter	Stern	—	69296	20	Suggestion for specific change to an alternative	Section 3.2.2 Visibility. The document acknowledges reasons for monitoring visibility but the nearest official recording stations are no where near the area of the proposed leases. At the very least the BLM needs to set up monitoring stations in the 1002 area.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies or monitoring may be necessary.
347.	Peter	Stern	—	69296	61	Suggestion for specific change to an alternative	Page 3-215 The 1 mile setback for the Jago river needs to be increased to 3 miles like the Okpilak.	Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.
348.	Peter	Stern	—	69296	90	Suggestion for specific change to an alternative	If concentration of predators begins to happen in the narrow section of the calving area due to roads, pipelines or human caused issues, Fish and Wildlife needs to monitor its' effect on calf mortality and have a plan for dealing with the issue. Quality of the forage PCH depend on needs to be monitored. If movement on the slope for post calving aggregation and/or insect driven is causing the animals to be driven to areas of poor forage this needs to be researched.	It is not within the BLM's authority to require other agencies to do studies and monitoring or house data.
349.	Peter	Stern	—	69296	91	Suggestion for specific change to an alternative	Funding needs to be found to ensure up to date and accurate subsistence harvest data is being collected. Monitoring of water use and extraction needs a published plan for which agency will have authority and responsibility and how it will be conducted.	Monitoring of water use and extraction is the responsibility of the State of Alaska, Department of Natural Resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
350.	Peter	Stern	—	69296	97	Suggestion for specific change to an alternative	Staging of oil spill containment equipment either at drill sites or in Kaktovik should be required as appropriate.	At the time of a site-specific proposal, the operator will be required to submit an oil discharge prevention and contingency plan (required by the State of Alaska), which will address oil spill containment and recovery.
351.	Curt	Leigh	—	69329	5	Suggestion for specific change to an alternative	Lease stipulations were included in the evaluation as measures to minimize impacts on non hydrocarbon resources. Unfortunately, even the most protective stipulations identified in the document are unreliable. All lease stipulations are subject to future waivers, exemptions, and modifications as authorized by the BLM Authorized Officer during project construction and operation (EIS p. 2-3 and Table 2-2). This flexibility makes the lease stipulations unreliable and ineffective measures to evaluate or reduce environmental impacts. The BLM Authorized Officer will be placed in a nearly impossible position, the Officer will need a wide range of expertise in order to understand the environmental, subsistence and cultural implications of contractor requests to exempt or modify measures that were originally developed to protect the full range of resources in the Arctic Refuge. In addition the Authorized Officer must conduct business in a remote setting while being subjected to pressure from lease holders, contractors and their political supporters. Without monitors that have the authority to stop work and immediately correct construction methods and without unprecedented protection from economic and political pressure the Authorized Officer's ability to protect resource values in the Arctic Refuge will be severely compromised.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the

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351. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
352.	Brett	Mayer	American Canoe Association	69778	1	Suggestion for specific change to an alternative	Alternative D2 should be amended to ensure protections for: access, wilderness character, visual resources, soundscapes, water resources and natural resources, in the stipulations and regulations.	Lease stipulations and ROPS designed to protect one resource may also provide protections for additional resources.
353.	Withheld	Withheld	—	70515	5	Suggestion for specific change to an alternative	DOES NOT have a proper spill response plan and the nearest Coast Guard station is in Kodiak, which is hundreds of nautical miles away and would take days to reach if there were to be large spill.	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.
354.	Withheld	Withheld	—	71099	3	Suggestion for specific change to an alternative	There has to be a risk assessment in event of a spill, especially after the Gulf disaster including bonds and money held to remedy such an event, restoration, impacts to native people, cultural and natural heritage.	Risk probability and analysis are beyond the scope of this EIS, but they may be completed at the development plan or site-specific level.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
355.	Jill	Nogi	Environmental Protection Agency	71634	16	Suggestion for specific change to an alternative	Required Operating Procedures: Required Operating Procedure 6, Item A, states that BLM may require a minimum of one year of baseline ambient air monitoring data for any pollutant of concern. We recommend the BLM consider requiring contemporaneous PSD-quality meteorological monitoring at the location of the air quality monitor. Required Operating Procedure 6, Item F, states that BLM may require mitigation measures and strategies in case an air quality analysis finds an exceedance of the NAAQS. The EPA recommends BLM expand this requirement to also include mitigation in the event an air quality analysis finds an exceedance of a PSD increment.	The BLM will consider air monitoring data and meteorological data collection requirements in coordination with ADEC at the time of a site-specific project proposal, which could include collecting PSD-quality data. Air modeling performed in support of project-specific NEPA analyses would include a comparison of modeled results to PSD increments. However, because regulatory authority for PSD consumption analyses lies with ADEC, it is outside of the BLM's regulatory authority to require mitigation for modeled PSD exceedances.
356.	Withheld	Withheld	—	72125	38	Suggestion for specific change to an alternative	* A general stipulation should be added to all alternatives that describes that, "rights-of- way or easements across the Coastal Plain for exploration, development, production, or transportation may be issued only where necessary to carry out oil and gas production activities within the identified surface use areas."	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any ROWs or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Any surface disturbance associated with ROWs count toward the 2,000-acre surface facility limit.
357.	Withheld	Withheld	—	72125	46	Suggestion for specific change to an alternative	A stipulation should be added that states, "[t]o extent authorized by under law, the free- flowing characteristics of Eligible river segments cannot be modified to allow any or all of the following: stream impoundments, diversions, channelization, and river bank stabilization."	Under all alternatives, the BLM would maintain free-flowing characteristics of eligible river segments and ensure that authorized uses comply with all stated objectives. Management actions that prohibit surface-disturbing activities, including NSO, CSU, and TLs near the eligible and suitable WSRs (Table 3-32) would provide varying protections for ORVs. This would also ensure that the free-flowing condition of the river remains intact.

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358.	Withheld	Withheld	—	72125	61	Suggestion for specific change to an alternative	The Leasing EIS must assess the effects of oil and gas seismic activities, exploration, and the full potential development footprint of the proposed action and alternatives on the collective purposes of the Arctic Refuge. In addition, the Fish and Wildlife Service recommended that the, "BLM analyze the cumulative effects of a full oil and gas build-out scenario within the Arctic Refuge Coastal Plain coupled with the full build-out scenarios for NPR-A and the State of Alaska lands of the Central Arctic."	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added. The hypothetical development scenario and the EIS analysis take a full build-out scenario of 2,000 acres of surface development into consideration. Projects considered as part of the cumulative impact analysis need to be "reasonably foreseeable." Full build-out scenarios for NPR-A and the State of Alaska lands do not meet this criterion.
359.	Joshua	Morris	Seattle Audubon Society	72238	1	Suggestion for specific change to an alternative	Required Operating Procedure 43 (pg. 2-36): By what process will equipment and vehicles be certified as free of nonnative invasive species? We are not aware of any such certification process nor of detection methods for all nonnative invasive species. Please clarify.	Text has been added to ROP 43.
360.	Joshua	Morris	Seattle Audubon Society	72238	2	Suggestion for specific change to an alternative	General Wildlife and Habitat Protections (pg. 2-36): Two Required Operating Procedures require minimization of loss of populations and habitat for plant species (ROP 44) and mammalian species (ROP 45) designated as sensitive by BLM in Alaska. Please clarify why there are no requirements to protect avian, fish, or invertebrate species designated as sensitive by BLM in Alaska.	BLM sensitive species policy would apply to all taxa. ROP 45 has been modified.

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361.	Richard	Edwards	—	74281	15	Suggestion for specific change to an alternative	On page 3-207, we discover that for Alternative B: "The long-term, permanent degradation of the program area's primitive recreation setting could result from not requiring final abandonment to meet minimal standards for WSR designation, not restoring general wilderness characteristics of the area, and allowing exceptions to abandonment conditions." Whereas, on page 3-208, we read that for Alternatives C & D: "In the long term, requiring final abandonment to meet minimal standards for WSR designation and intent to restore general wilderness characteristics of the area would allow the program area to return to a primitive recreation setting. The removal of facilities and restoration of disturbed areas would eliminate displacement and access impacts associated with those features." Given the already unproven track record of even the most aggressive reclamation efforts to date in this harsh environment and the BLM's attempt to promote the 2,000-acre occupation limit as a moving target, why would we even consider constructing an alternative incorporating a lesser reclamation standard? The Draft EIS must be revised to eliminate a low bar reclamation standard as part of any proposed action alternative through revision of ROP #35 (page 2-32).	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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362.	Richard	Edwards	—	74281	16	Suggestion for specific change to an alternative	Lease Stipulation #9 purports to provide special protective measures for the biologically sensitive coastal waters. However, there is no specific mention of seawater treatment plants. Given critical nature of STP placement and operation in coastal waters, this is a significant omission. Lease stipulation #9 must be revised to highlight the specific requirements related to STPs.	The level of specificity for this would be determined at the project-level authorizations. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
363.	Richard	Edwards	—	74281	18	Suggestion for specific change to an alternative	6) Needed Revision of Required Operating Procedure 1 (DEIS, Chapter 2): Although the objective statement refers to “applicable ... laws and regulations”, the requirement/standard statement provides the lessee with no specific direction---in contrast to almost all other ROPs. For example, on page B-17, we find the following description: “Solid, unburnable waste would be disposed of in large trash receptacles or other approved containers and hauled to approved off-site landfills. On-site burial of solid wastes is not anticipated.” Could this ROP objective be achieved by on-site burial? The last sentence in the above excerpt certainly does not seem to eliminate that as an option. On-site burial of solid, unburnable waste is certainly not a best management practice for the Coastal Plain ROP #1 must be revised to provide direct prescriptive guidance to potential lessees.	ROP 2 provides direct prescriptive guidance through the development of a comprehensive waste management plan.

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364.	Lisa	Baraff	Northern Alaska Environmental Center	74306	3	Suggestion for specific change to an alternative	The rationale presented in Section 2.3 (Alternatives Considered But Eliminated From Detailed Analysis) regarding the decision to not carry forward an alternative considering 800,000 acres is irrational. BLM argues that low and medium potential areas must be included, since the high potential area is only 427,900 acres. With 658,400 acres of medium potential and 477,200 of low potential, BLM would only need to include 372,100 acres of medium potential and no acres of low potential areas. And that assumes that 400,000 acres would sell in each lease sale. In addition, BLM argues that the acreage considered in Alternative D (1,037,200) is "similar in concept" to an 800,000 acre option. The roughly 30% difference in acreage could be anything but "similar."	Alternative D2 has been revised to offer 800,000 acres of land available for lease. Based off best available information, the action alternatives maximize the areas with the highest HCP; the action alternatives balance areas with the highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000-acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections).
365.	Lisa	Baraff	Northern Alaska Environmental Center	74306	18	Suggestion for specific change to an alternative	BLM states in required operating procedure 35 that it will "[e]nsure ongoing and long-term reclamation of land to its previous condition and use" through unspecified reclamation requirements. BLM claims that, before final abandonment, "land used for oil and gas infrastructure - including well pads, production facilities, access roads, and airstrips - will be restored to ensure eventual restoration of ecosystem function and meet minimal standards to restore general wilderness characteristics." What are the criteria for reclamation and what agency will be responsible for determining what is adequately reclaimed and when that land can be released from the 2000 acre cap?	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
366.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	1	Suggestion for specific change to an alternative	We recommend BLM modify their Alternative B as follows: * Narrow the Timing Limitation for the Porcupine Caribou Herd to the southwestern portion of the Program Area to be more consistent with recent calving data and Traditional Knowledge on how the Porcupine Caribou Herd utilize the 1002 Area. * Limit areas of No Surface Occupancy in the Program Area to create a competitive leasing program without fracturing the program area, and avoid potential restrictions to Nativeowned land that abuts or is within a described NSO. * Include a 0.5 mile setback on either side of the Hulahula River, 0.5 mile setback on either side of the Okpilak River, a 1 mile setback around Fish Hole One, and a 0.5 mile setback on the east side of the Staines River to the Canning River and along the western boundary of the Program Area. These setbacks are designed to protect subsistence resources and subsistence thoroughfares based on the guidance of Kaktovik hunters.	Timing limitations and buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. Operators may submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

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367.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	2	Suggestion for specific change to an alternative	In addition to our recommendations on the modifications to Alternative B, KIC makes the following suggestions for BLM to refine their EIS to be more aligned with the local community most directly impacted by leasing in the Program Area: 1. Focus the impact analysis on the Kaktovikmiut; 2. Enhance the local input and traditional knowledge in the DEIS; 3. Incorporate local economic impacts and potential for local capacity building in the impact analysis; 4. Include co-management with Alaska Native Landowners and opportunities for Nativeowned land; 5. Include local access issues raised by the community of Kaktovik; 6. Clarify FWS management over unleased land in the Program Area; and 7. Refine the analysis of Subsistence and Subsistence Resources.	As appropriate, additional information has been added to the EIS on the Kaktovikmiut. Traditional knowledge has been shared with the BLM throughout development of the EIS, including during the scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis. Additional local economic impacts have been included in Section 3.4.10. The BLM does not have authority to enter into cooperative agreements for comanagement of surface resources in the Coastal Plain because they are not BLM public lands under FLPMA 307(b). Additional text has been added to subsistence, transportation, and lands in Sections 3.4.3, 3.4.9, and 3.4.1, respectively. Additional clarifying text has been added to Section 1.4. Analysis of subsistence uses and resources (Section 3.4.3) has been revised as necessary based on responses to public comments.

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368.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	3	Suggestion for specific change to an alternative	Though BLM acknowledges Kaktovik is the impacted community, BLM strays from assessing the impacts to Kaktovik throughout the DEIS. KIC understands that BLM must assess the extent of impacts, but we do not think these should be discussed equally but weighed in proportion. The Gwich'in will not be impacted from oil and gas leasing similarly to the Kaktovikmiut. Yet, BLM spends almost the same (or more) time discussing the impacts to the Gwich'in, providing background on Gwich'in history, and summarizing Gwich'in cultural resources, socioeconomic impacts, subsistence, and more. We find this analysis distracting from the actual impacts. Ironically, BLM and others often neglect to include the Gwich'in own efforts toward resource development. In the 1980s, Venetie attempted to lease 1.8 million acres of their land near the wilderness area of the ANWR-an area larger than the entire Program Area being discussed for resource development. There are also ongoing efforts to develop the Yukon Flats Refuge, both Arctic Village and Venetie have received payments from leasing and seismic acquisition efforts. KIC is not against the Gwich'in effort to develop their land and to utilize their natural resource to the benefit of their people, for that is what we are attempting to provide for our shareholders. Despite BLM's longwinded background on the Gwich'in, BLM concludes in almost every section, including subsistence, that the Kaktovik are the only impacted community. KIC agrees with this assessment. BLM's should modify their analysis to center their analysis on the impacted community-Kaktovik-and a discussion of impacts expected from leasing in the Program Area.	The BLM has edited the EIS to provide additional information on Kaktovik as necessary to support the analysis.

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369.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	4	Suggestion for specific change to an alternative	2. Enhance the level of local input and traditional knowledge in the DEIS KIC has attended several meetings with BLM staff to discuss leasing in the Program Area and is actively participating in ANCSA Corporation Consultation. BLM has worked to include Kaktovik in this process and has had several meaningful engagements in Kaktovik discussing this important topic; however, there is hardly mention of the local expertise reflected in the DEIS. BLM references several "phone conversations" with "experts" on important topics like subsistence and polar bears, but valuable information from our engagements are not included. BLM should work to better include the Traditional Knowledge and local expertise in the DEIS to produce a more balanced document.	The BLM has edited the EIS to provide additional information on Kaktovik as necessary to support the analysis.

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370.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	8	Suggestion for specific change to an alternative	6. Clarify FWS management over unleased land in the Program Area. BLM must distinguish its oversight role with that of FWS. Historically, the FWS has managed the 1002 as wilderness, which has caused numerous issues with the local people. KIC was created by ANCSA to provide for our shareholders, however FWS' management of the refuge and the restriction of development in the 1002 Area have limited our ability to utilize the natural resources in the Coastal Plain to provide for our shareholders. We have felt ignored and that our concerns have been disregarded as development has progressed around us in Canada and across the North Slope in equally pristine regions. As BLM assumes authority over oil and gas leasing, BLM and FWS should clarify what their management roles will be within the 1002 Area. At the onset of leasing, KIC is concerned that FWS may continue to manage setbacks at the coast or along the requested rivers and unleased land as wilderness. Not only will this have detrimental effects on the success of leasing, but it will also carry on unresolved subsistence access issues if these areas are managed as wilderness.	Additional clarifying text has been added to Section 1.4 regarding roles and responsibilities of the BLM and the USFWS. Additional text has been added to the subsistence, transportation, and lands Sections 3.4.3, 3.4.9, and 3.4.1, respectively.
371.	Eric	Walsh	Government of Canada	74346	7	Suggestion for specific change to an alternative	requests that the BLM complete an analysis to determine if meeting the intended purposes of the ANWR10 may best be accomplished by leasing the minimum acreage required by PL 115-97. We note that, for Refuge management purposes, oil and gas leasing is subservient to the conservation purposes according to Fish and Wildlife Service policy11.	Alternative D2 has been revised to include 800,000 acres of land available for lease. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

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372.	Eric	Walsh	Government of Canada	74346	22	Suggestion for specific change to an alternative	In many instances, mitigations and measures can be waived by the "BLM Authorized Officer". Though this term is defined in the glossary, it is unclear to what level in the organization this authority is normally delegated. More concerning however is that there are no criteria in the dEIS that indicate how such discretionary authority will be objectively applied. The United States Government Accountability Office report GAO-17-30731 concludes that "Because BLM does not consistently track exception request data or have a consistent process for considering requests and clearly documenting decisions, BLM may be unable to provide reasonable assurance that it is meeting its environmental responsibilities."	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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373.	Eric	Walsh	Government of Canada	74346	30	Suggestion for specific change to an alternative	While the dEIS discusses ROPs and stipulations, more detail is warranted, specifically in a formal adaptive management context by having an independent oversight board for development, coordinated before-and-after studies, publicly available data and results, and timely revision of ROPs, stipulations, and mitigations.	Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
374.	Donald	Pendergrasst	—	75129	3	Suggestion for specific change to an alternative	Stronger temporal limits need to be included in Alternative D2 in order to protect Porcupine Caribou Herd calving and post-calving periods ("when caribou abound, shut 'em down").	Current lease stipulations and ROPs regarding protections for PCH calving and post-calving habitat were developed through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts. The varying protections remain in order to analyze a reasonable range of alternatives.
375.	Withheld	Withheld	—	75139	2	Suggestion for specific change to an alternative	Secondly, the proposed alternatives are inadequate, in that they do not provide an absolute-minimum scenario. One striking example is the projected impact on visual resources under alternative D, which clearly represent a major impact. The EIS should include an absolute-minimum scenario. BLM has an obligation to provide a true picture of the severity of impacts that would be incurred if oil and gas are allowed to proceed in the Coastal Plain, and to provide a minimum impact scenario to enable maximal protections of this precious resource and against global climate impact from such an irresponsible plan as oil and gas leasing as called for in the atrocious PL 115-97.	Alternative D2 has been revised to include 800,000 acres of land available for lease.

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376.	Withheld	Withheld	—	75257	5	Suggestion for specific change to an alternative	Lease Stipulations / Required Operating Procedures 1. Because the arctic plain is biologically, socially, and economically unique in North America, it requires specific measurable and quantifiable stipulations and restrictions applied to the permafrost, remote, pristine wilderness that is being entered so that effects can be assessed for appropriately in the EIS. 2. Language like 'minimize', 'reduce', 'prevent unnecessary or undue degradation', 'avoid where practicable', 'may be considered', 'case by case basis', and even 'protect' provide insufficient specificity to allow assessment of impacts required in the DEIS nor does it provide for a measurable effects analysis. 3. Stating the lessor / proponent will conduct studies before exploration, development, or drilling to ensure drilling would not impact resources without specific guidance, without the definition of a study design, and without any review and approval standards is completely inadequate. This is prevalent throughout the EIS and is a wholly inadequate approach to providing standards for lease stipulations and required operating procedures so the effects of what is going to occur can be assessed. The same applies for requiring the lessor to develop conflict avoidance and monitoring plans without standards. 4. Alternative D stipulations provide restrictions for places where important plant, animal, and fish resources are known. The EIS does not address the potential impacts to those same resources in places where they have not been documented, nor ways they would be protected. This is a large inadequacy. 5. Specific Rivers and Creeks are named for protection with setbacks - where permanent facilities are prohibited. This is problematic for	A project-specific NEPA analysis would be required for any development in the Coastal Plain, which would involve multiple federal, state, and local agencies, as well as tribal governments and ANCSA corporations. Alternatives analyzed in a project-specific NEPA analysis would necessarily examine these potential means for further reducing impacts on surface resources that may be affected by a site-specific project.

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376. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	two reasons. There are thousands of places that are ecologically sensitive that deserve protection that are not named - and are not addressed at all in the lease stipulations. There is no language for limiting non-permanent facilities of any kind so temporary roads, trails, airstrips, powerlines, pipelines, etc. are not restricted. This impact is not analyzed. 6. ROP 28 and 29 require the creation of an ecological land classification map and an archaeological / paleontological resources map to be able to assess the appropriateness of facility development. It seems like this is the basic standard for an analysis in an EIS for all resources. Completing an EIS and then determining what is out there so important areas can be avoided is a backward way of evaluating the proposed alternatives and determining effects.	(see above)
377.	Withheld	Withheld	—	75601	7	Suggestion for specific change to an alternative	Only two ROPs directly address cultural resources, and they by themselves are not sufficient to minimize or mitigate adverse effects. Specifically, ROP 29 requires the lessee/operator/contractor to conduct a cultural resources survey before ground-disturbing activity. However, potential impacts to cultural resources should be known prior to the lease being approved, and therefore a cultural resources study should be required prior to the lease being approved, and submitted as part of the lease application.	Lease stipulations and ROPs designed to protect non-cultural resources may also provide protections for cultural resources. ROP 29 requires a cultural resource survey before any ground-disturbing activity; the BLM cannot impose a ROP tied to a lease prior to a lease being issued.

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378.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	5	Suggestion for specific change to an alternative	many of the proposed NSO restrictions and setbacks go far beyond mitigation measures effectively employed for decades across the North Slope to protect sensitive areas, water bodies, wetlands, polar bears, caribou, and other natural resources. BLM should make determinations on the appropriateness of surface occupancy restrictions as compared to other successfully deployed mitigation measures based on site-specific analyses of reservoir targets, the best available technology, and site-specific wildlife studies, as is done in the NPR-A.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.
379.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	9	Suggestion for specific change to an alternative	Table 2-2 describes the minimization objectives associated with each lease stipulation but does not describe or analyze how NSO stipulations would achieve the stated objectives. In fact, in some places, the DEIS appears to suggest that a mitigation objective could be similarly achieved through either an NSO or a non-NSO stipulation, suggesting that the choice between these alternatives would be arbitrary. ⁶³ Without the benefit of BLM's analysis of whether and to what extent NSO restrictions are warranted to meet the stated mitigation objectives, the oil and gas industry cannot meaningfully comment on whether the specific NSO requirements are reasonably related to a legitimate governmental purpose or whether the stated mitigation objectives could be achieved with less burdensome mitigation measures.	The Lease stipulations and ROPs were designed to mitigate impacts on multiple resources. The fact that impacts on a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA.

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380.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	10	Suggestion for specific change to an alternative	As discussed in Section III.A.3 supra, mitigation or avoidance measures to protect surface resources should be developed by BLM in consideration of site-specific development proposals at the time the surface use plan and application for permit to drill for such proposals are considered. Accordingly, BLM must modify the alternatives, consistent with the Tax Act, to remove broad NSO stipulations, setbacks and other broad, surface-related restrictions not related to site-specific information.	The BLM is required to ensure all action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge at the leasing stage. In the event that an objective of a lease stipulation or ROP may be met through another means, when submitting a site-specific proposal, operators may request a waiver, modification, or exemption. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
381.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	22	Suggestion for specific change to an alternative	2-4 to 2-5 Lease Stip. 1 This stipulation should provide an explanation for why the proposed setback distances correlate to protection of terrain, habitat or floodplain features, and the stipulation should define boundaries based upon the presence of such features. Finally, the FEIS should recognize that a pipeline cannot span a river or stream under the setbacks provided in this stipulation. The FEIS should describe scenarios in which such crossings would be allowed, rather than relying on future undefined and uncertain exception processes for all pipeline crossings.	The setbacks are designed to protect multiple resource functions and values. Additional text has been added to Table 2-3 in the Final EIS to further describe the waivers, exceptions, and modifications for applicable lease stipulations and ROPs.
382.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	23	Suggestion for specific change to an alternative	Lease Stips. 1 & 2 The DEIS appears to describe a different stipulation framework for river deltas than for rivers and streams. The Associations suggest moving river delta stipulations to stipulation 2.	No change. Lease Stipulation 2 is specific to the Canning River Delta and lakes only.

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383.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	24	Suggestion for specific change to an alternative	Lease Stip. 4; Alternative D(b) This component of the stipulation requires coordination of construction and infrastructure use with "all other prospective Arctic Refuge users or user groups," but does not clarify how this coordination would be achieved given the likely difficulty of identifying and coordinating with "all" potential user groups. This stipulation should be revised to clarify that coordination will be accomplished through public notice and consultation.	Text revised to add that this "may be accomplished through public notice and coordination with users in affected communities."
384.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	25	Suggestion for specific change to an alternative	Lease Stip. 10; Alternative D In order to "[p]rotect wilderness values," this stipulation would prohibit surface occupancy within 3 miles of the southern and eastern boundaries of the Coastal Plain near the Mollie Beattie Wilderness Area. This presumptive setback is inconsistent with the Tax Act and the newly revised purpose of ANWR under ANILCA "to provide for an oil and gas program on the Coastal Plain." Visual or other impacts in such areas should be considered on a case-by-case basis in review of specific proposals for development, not subject to preemptive prohibition.	The BLM is required to ensure all action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge at the leasing stage. See Section 3.4.7.
385.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	27	Suggestion for specific change to an alternative	2-18 ROP 6(c) To remove ambiguity, this ROP should be revised to clarify the scope of indirect emissions sources or to allow indirect sources to be addressed qualitatively, consistent with the most current practice on the North Slope. For example, hauling materials to the North Slope on the Dalton Highway is generally considered an indirect source, but is never quantified. As written, this ROP could be interpreted to require calculation of these emissions and many others as part of an initial application. This is more information than is needed for BLM to determine the appropriate scope of the air quality analysis under NEPA.	The specific change was not implemented; however, the text of ROP 6 has been modified.

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386.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	28	Suggestion for specific change to an alternative	2-18 ROP 6(f) To reinforce that decisions on mitigation should not be solely based on model-predicted impacts that are often inconsistent with existing measurements, and to ensure that decisions to implement mitigation are based on specific strategies that cause quantifiable improvements to predicted elevated impacts, this ROP should be modified to include the following italicized language: "If, after factoring in existing measurements, modeling conservatism, and model applicability, the air quality analysis shows potential future exceedances of the National Ambient Air Quality Standards (NAAQS) or Alaska Ambient Air Quality Standards (AAAQS) or impacts above specific levels of concern for AQRVs, the BLM would require air quality mitigation measures and strategies shown to effectively mitigate causes of the predicted impact within its authority and in consultation with"	The specific change was not implemented; however, the text of ROP 6 has been modified.

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387.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	29	Suggestion for specific change to an alternative	2-19 ROP 7 This ROP would require a proponent of a permanent oil and gas development to design and implement a monitoring study of contaminants in locally used subsistence foods. We recommend removing this proposed requirement for at least three reasons. First, potential contaminants from oil and gas operations are already prevented from entering subsistence foods due to the applicability of numerous monitoring and release prevention requirements. This ROP may be interpreted to imply some level of tolerance for pollution to enter subsistence foods, which is misleading and would likely cause groundless concern over subsistence food. Monitoring should instead be focused as needed on potential sources of contamination and related environmental areas such as nearby water bodies. Second, placing responsibility on a lessee or operator to conduct subsistence food sampling can be intrusive to subsistence users and tends to create tension between the users and the operators. Third, a sampling program designed and implemented by an operator may be viewed with skepticism by the subsistence community. Accordingly, should any sampling of subsistence foods prove to be necessary, it is an effort better suited to the federal land manager, the trustee agency for the species at issue, or the local government.	As noted in footnote 1, Table 2-3 in the Final EIS, the BLM will consult with appropriate entities on site-specific projects, which could include approaches to monitoring.

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388.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	30	Suggestion for specific change to an alternative	2-19 ROP 8 This ROP would prevent the withdrawal of unfrozen water from springs, rivers, and streams during winter. If implemented, this ROP would have significant adverse impacts on oil and gas operations, particularly given that rivers and streams comprise most of the water resource available in the lease areas. Moreover, the ROP is unnecessary and inconsistent with proven existing regulation of water withdrawals on the North Slope. BLM should consider modifying this ROP to be similar to stipulations protecting anadromous fish, including the use of fish screens and limitations on the amount of liquid water under ice that could be removed.	This ROP is consistent with current practices across the North Slope and is included in the current NPR-A Integrated Activity Plan Record of Decision as a best management practice. If the objective can be met without implementation of this ROP, then the operator could apply for a waiver, exemption, or modification.
389.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	31	Suggestion for specific change to an alternative	ROP 9 Paragraph d of proposed ROP 9 is confusing and has been contentious in its application in the NPR-A. There, BLM often applies this provision in an overly restrictive manner that regularly results in the need to request a deviation in order to secure the amount of ice needed for ice road and pad construction. These requests are granted because ice aggregate is removed from areas of lakes frozen down to the lake bed and therefore does not reduce fish, aquatic invertebrate, or waterfowl habitat. For this reason, we recommend that BLM delete paragraph d from this proposed ROP and add a clause to paragraphs a and b that allows up to 20% total lake volume to be used when both ice and water are being withdrawn. This would be protective of hydrology and habitat, and consistent with state regulations.	The 15 percent, 20 percent, and 30 percent limits are what the State of Alaska (both Alaska Department of Fish and Game and DNR Water) will use to issue any required fish habitat permits or temporary water use authorizations. Deviations could be issued if the operator provides adequate justification for the need and provides the necessary bathymetric information and predicted or measured recharge for the lake in question.

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390.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	32	Suggestion for specific change to an alternative	ROP 10 The Associations have significant concerns about ROP 10, both in terms of how it is presented and its specific mitigation proposals. First, ROP 10 appears to primarily apply to marine or on-ice seismic operations. Much of the anticipated seismic work on the Coastal Plain is expected to be terrestrial, so the presentation of ROP 10 is unnecessarily confusing. The Associations request that the FEIS clearly indicate that ROP 10 applies to marine or on-ice operations only. Second, the FEIS should treat polar bears and ice seals separately in terms of the "requirement/standard" articulated in the ROP. These species have different life cycles, agencies of oversight, dates of biological significance, and types of mitigation. It is inappropriate to apply the same requirements and standards to both. Moreover, while ringed seals are mentioned, there is no mention of other ice seals or whales. It is 5 99959215.12 0078439-00052 critical that the FEIS clarify to which species this ROP is intended to apply, and that the requirements/standards and mitigation be specific to and appropriate for each species. For example, it is valid and appropriate to assume that a polar bear maternal den survey would be conducted between October 30 and April 30 in consultation with FWS for winter overland moves and seismic work. However, this date range is only valid for polar bears. For ice seals, new activities over a previously undisturbed area in ice seal habitat should occur between March 1 and April 15 in consultation with NMFS. Seal mitigation measures should be set forth separately, as they do not build lairs or pup until March.	The BLM revised ROP 10 to clarify the distinction of marine mammals, and mitigation measures associated with each species and during separate activities.

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391.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	33	Suggestion for specific change to an alternative	ROP 32 This ROP should be modified to remove the requirement for eider nest searches. The DEIS recognizes at page 3-86 that Steller's eiders are "considered to occur only as a rare visitor in the program area and [are] not expected to nest that far east on the ACP." On the same page, the DEIS notes that Spectacled eiders are "uncommon breeders in the program area, and nests have been documented only on the Canning River delta."	This ROP was developed in coordination with resource experts and determined to be a necessary precaution to protect the resource.
392.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	34	Suggestion for specific change to an alternative	ROP 11(e) This component of the ROP requires an undefined offset to avoid portions of previous ice road routes. This is not warranted because, as recognized in the GMT2 SEIS, "[a] study by Yokel et al. (2007) suggests that seasonal ice roads and pads constructed within the same footprint each year do not have additive effects over years." GMT2 SEIS at 336. Moreover, constructing an ice road in the same location as subsequent years is considered best practice and may be necessary to avoid difficult terrain, archaeological sites or sensitive environmental resources.	ROP 11 has been modified related to ice roads.

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393.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	35	Suggestion for specific change to an alternative	ROP 34 This ROP would require minimum flight altitudes over certain areas and should be clarified to accommodate the need to fly lower for some required activities (e.g., archaeological clearance, spill response equipment staging and demobilization). In addition, rather than providing for "possible suspension of all flights" for "disturbance determined to be unacceptable," this ROP should be modified to provide for "adjustments, including redirection, modified scheduling, or temporary suspension of specific flights" Finally, the ROP's provision that takeoffs and landings to support oil and gas operations would be limited "to the maximum extent possible" should be revised to limit takeoffs and landings "to the extent practicable and consistent with prudent operation of facilities."	Additional clarifying text has been added to ROP 34c.
394.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	36	Suggestion for specific change to an alternative	ROP 41(a) This ROP should be revised to clarify that vehicles already approved by the Alaska Division of Mining, Land and Water for summer off-road travel would be considered authorized and would not require additional process or approvals.	Additional text has been added to ROP 41(section a).

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395.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	37	Suggestion for specific change to an alternative	2-36 ROP 45 Based on molecular genetic research published in 2010 and 2012, the Alaska tiny shrew has been merged by mammal taxonomists with the Eurasian least shrew and is now classified as the Holarctic least shrew (<i>Sorex minutissimus</i>), which occurs from Scandinavia, across Russia, and into Alaska and Yukon, and which is classified by the International Union for the Conservation of Nature as "least concern." Because of this changed taxonomic status and the fact that the species is not listed in the State of Alaska's current Wildlife Action Plan, this species does not meet the eligibility criteria for Sensitive species established by BLM Manual 6840.	ROP 45 has been modified accordingly.

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396.	Anne	Fuller	—	80944	4	Suggestion for specific change to an alternative	This DEIS proposes only a few alternatives, while not respecting the law. While the new law (Tax Act) requires that only 2000 acres be impacted, the project described in the DEIS includes more acreage (from the abstract: "Alternatives B, C, and D propose a range of the extent of the Coastal Plain that would be available for lease sale—from 66 to 100 percent of the 1.56 million-acre Coastal Plain.") Disturbance to the land and water (and thus to the creatures, including humans who depend on it) from ice roads and ice pads matter. It is hard to see how one can justify that digging up gravel is not part of the facilities for oil and gas production (as you say on 1-6). Where is the analysis of proposed seismic exploration, surely a necessary part of the project? Clarification of the leased, non-leased, and reclaimed acreage is needed to evaluate the impacts of this leasing. There should be a scientifically accurate statement of what reclaimed acreage looks like and what ecological functions have been restored. Are there any examples of such ground north of the Brooks Range?	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. A site-specific NEPA analysis would be done for any proposed seismic explorations. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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397.	Natalie	Dawson	—	81061	8	Suggestion for specific change to an alternative	As an Alaskan, I am particularly concerned about the impacts of this leasing program on the future of climate change in the Arctic. I am asking the BLM to require a cost-share agreement as part of any leasing program, in which leases on federal land are taxed at a higher than current rate, and some of the revenue (at least 50%) is returned to environmental research and ongoing monitoring, including spill response systems. The Arctic Slope Regional Corporation, and each of its subsidiaries including SAEploration, should have additional taxes placed on them when developing and leasing federal lands because they are for-profit corporations. Currently, it is tax-advantageous in the state of Alaska to promote oil and gas leasing. This structure should change, so that taxes benefit research and not development. This should take the form of a climate tax-any project that adds significantly to climate change (measured by carbon concentrations) should be taxed with an additional structure in place to pay forward the harm done to the environment for current and future generations.	The BLM does not have tax authority. In PL 115-97, Congress has dictated the distribution of revenues generated from an oil and gas program.
398.	Todd	Campbell	Conservation Biology course	81185	9	Suggestion for specific change to an alternative	We suggest modifying alternative D-1 to require bear safety training for all working on 1002 to avoid human-bear interaction (including waste management).	Under ROP 40g (all alternatives), all personnel involved in oil and gas and related activities would be trained on human/bear safety.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
399.	Todd	Campbell	Conservation Biology course	81185	11	Suggestion for specific change to an alternative	Each terrestrial animal discussed could be affected by the habitat destruction and noise pollution. The special rules in the D-1 alternative protecting caribou and their calving sites should be extended to moose, wood bison and muskoxen. These species are struggling in calf survival as well. The D-2 alternative is also offering the least number of affected acres which is important because many of these species have uncertain range and affecting the least number of acres is ideal. This alternative will not be rejected compared to a no action request. However, modification is needed to care for more terrestrial animals aside from the caribou.	Lease stipulations and ROPs designed to protect one resource may also provide protections for additional resources.

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400.	Todd	Campbell	Conservation Biology course	81185	12	Suggestion for specific change to an alternative	Noise pollution can also be a huge problem with vessels and other machinery that would be used in oil and gas drilling. We would need an understanding of how noise was going to be regulated and where the noise would be traveling too and how severely that would affect certain mammals. Alternative D does have the biggest protection of marine mammals apart from alternative A, which has been deemed unviable due to the Tax Cuts and Jobs Act of 2018. Alternative D seems to show 0.5- to 4-mile buffers around 17 rivers and streams which is good for some noise and water pollution reduction. This alternative also shows that it would have the lowest habitat destruction. What the EIS fails to show is the key differences for Alternative D-1 and Alternative D-2 in regards to marine mammals. There is no way to define which one would seem like the better option since they are so similar. I also suggest there be in place a required plan for the quickest ways to clean up oil-spills if ever were to occur and if drilling would continue once a spill had happened. Alternative D seems like the best and most reasonable alternative for the marine mammals' future and conservation.	The fact that impacts on marine mammals are similar across Alternatives D1 and D2 does not, per se, indicate that the range of alternatives is not reasonable under NEPA. At the time of a site-specific proposal, the operator will be required to submit an oil spill response plan.
401.	Steven	Amstrup	Polar Bears International	81368	101	Suggestion for specific change to an alternative	BLM must include a more comprehensive set of required, measurable, and enforceable mitigations, that is based on the results of air quality modeling analyses, to ensure there will be no significant impacts to air quality from the proposed leasing program.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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402.	Steven	Amstrup	Polar Bears International	81368	107	Suggestion for specific change to an alternative	At the Prudhoe Bay oil field - which includes oil and gas production, gas processing and gas reinjection processes - BP has successfully implemented a cost-effective centrifugal compressor seal oil de-gassing emissions recovery system that uses wet seal centrifugal compressors with a seal-oil / gas separation system that recycles the separated gas and reduces over 45,000 tons per year of CO ₂ eq emissions from each compressor. ⁶⁴ BLM should consider this and / or the use of dry seals as a means to minimize CO ₂ eq emissions from centrifugal compressors, where applicable, at development sites on the Coastal Plain. Controlling emissions from compressors in these ways is consistent with EPA's New Source Performance Standards (NSPS) for the oil and natural gas sector. ⁶⁵	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
403.	Steven	Amstrup	Polar Bears International	81368	108	Suggestion for specific change to an alternative	Equipment leak detection and repair programs across all sectors (i.e., processing, production, transmission and storage) can be cost-effective and significantly reduce methane and VOC emissions. Leak detection and repair (LDAR) programs are vital to addressing fugitive emissions from oil and gas sources. EPA's technical analysis for its 2016 NSPS for the oil and natural gas industry estimated the following potential emissions reductions from LDAR programs: 40 percent reduction in emissions for annual monitoring; 60 percent reduction in emissions for semiannual monitoring; and 80 percent reduction in emissions for quarterly monitoring programs. ⁶⁶ Any oil and gas development on the Coastal Plain should require leak detection and repair programs at sites with gas production, processing, and / or transport.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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404.	Megan	Williams	o.b.o. Trustees for Alaska	81368	110	Suggestion for specific change to an alternative	BLM should commit to requiring specific minimum oil and gas mitigations and consideration of additional enhanced mitigations based on the most recent demonstrated technologies. In order to ensure that the minimum required mitigations are reflective of the latest available technologies and practices, BLM should make a commitment to periodically reviewing and revising the list of minimum required controls and enhanced mitigation measures every three years based on a review of currently-available cost-effective controls. This process of updating the minimum controls should include input from an air quality technical work group established under the air quality MOU.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
405.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	113	Suggestion for specific change to an alternative	There is a large body of scientific work documenting the adverse impacts to public health and welfare from climate change caused by greenhouse emissions, such as methane. More recently, scientific studies have demonstrated that these same methane emissions contribute to the formation of ground-level ozone. ⁷⁵ Methane reductions, therefore, have a direct impact on both climate change and ozone pollution. In addition, many of the proven methane emission controls for the oil and gas sector also reduce volatile organic compounds (VOCs) and HAPs. The associated air quality benefits that result from reductions in VOC and HAP emissions are a huge co-benefit of methane reduction technologies. BLM should consider mitigation measures and reasonable alternatives to minimize fugitive methane from an oil and gas program on the Coastal Plain.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
406.	Allison	Athens	—	81746	8	Suggestion for specific change to an alternative	The orientation program associated with permitted activities is wholly inadequate. There are no consequences attached to failing to follow these standards and no actual behavioral requirements expected of and enforced on operators. In order to show that an orientation program would be effective at meeting this procedure, BLM needs to supply associated data for all aspects of this program as experienced in other remote oil fields in Alaska with rural Native communities living close by.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.
407.	Allison	Athens	—	81746	12	Suggestion for specific change to an alternative	What is the oversight of whether or not the seasonal workers conform to these standards to be instituted and enforced? BLM has failed to address these as actual, real, impacts on people and animal lives. BLM has failed to provide any data that an orientation program lessens the impacts associated with seasonal worker camps on remote village communities and on endangered and subsistence animals.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.
408.	Allison	Athens	—	81746	13	Suggestion for specific change to an alternative	BLM has failed to provide actual mitigation of these effects because BLM has not provided any enforceable consequences for failing to adhere to these standards. Without punishable consequences, BLM presents a toothless platitude to the real concerns of community members. No doubt the making of this ROP is informed by the concerns of community members voiced at public hearings who have heard of the social ills brought by the influx of seasonal workers into isolated rural communities. Given that BLM has seen fit to have this ROP in all three alternatives, it is not outside the scope of this project to require more substantial analysis of these orientation programs.	As noted under ROP 40 (section i), the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.

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409.	Ruth	Wood	—	83199	2	Suggestion for specific change to an alternative	A bigger problem is that this Draft EIS should cover only one lease sale. Public Law 115-97 calls for one lease sale in 4 years and another in 7 years. If a lease sale is allowed to proceed, and I assert that it should not, then things learned from the first lease sale should be used to draft an EIS for the second. Developments under the first lease sale will most assuredly impact the Refuge, and an additional EIS will be needed to address the cumulative impacts. Under no circumstances should both lease sales proceed at the same time, and Congress clearly did not intend for them to be simultaneous: "(I) the initial lease sale under the oil and gas program under this section not later than 4 years after the date of enactment of this Act; and (II) a second lease sale under the oil and gas program under this section not later than 7 years after the date of enactment of this Act."The Draft EIS says, "This Draft EIS is intended to fulfill NEPA requirements for lease sales conducted at least through December 2027 and potentially thereafter. Before it conducts the second and each subsequent lease sale, the BLM will evaluate the adequacy of the Draft EIS in light of new information and circumstances to determine whether it requires supplementation or revision in order to comply with NEPA" (from volume 1, I-5.) First, the clause "and potentially thereafter" should be deleted from the Draft EIS. As stated, the Draft EIS would fulfill NEPA requirements forever, and that clearly does not make sense. Second, this clause says the second and each subsequent lease sale. Only two sales have been authorized, so this language needs to be fixed. I understand that BLM thinks it may employ a phased approach, but this whole section is unclear and needs to be rewritten	The Tax Act requires a minimum of two lease sales; the lease sales are not simultaneous. This EIS is programmatic and intended to address all potentially foreseeable lease sales in the Coastal Plain. After the initial sale, and prior to each subsequent sale, the EIS will be evaluated to determine if it continues to remain adequate under NEPA.

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410.	Matt	Krogh	Stand.earth	83321	3	Suggestion for specific change to an alternative	It remains unclear how the seismic process folds into the DEIS and lease sales. The lease sale bidding process is also unclear, as outlined in detail in the coalition comments referenced above. These processes need to be clarified with opportunity for public comment.	The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. 43 CFR 3131.4-1 outlines the details of the lease sale bidding process.
411.	Cody	Deane	—	92108	1	Suggestion for specific change to an alternative	However, this relevant background information is rarely followed by quantitative predictions and results from other communities following oil development. Stated otherwise, there is little relative information exploring how 1002 development under the four alternatives. This is repeated throughout much of the document. For example, in the section beginning on page 240 ("Noise, Traffic, and Human Activity") there are no predictions on how these factors might change in a meaningful way. For example, "Under Scenario B, it could be expected that winter truck traffic to well pads would average 14 trucks per day during the period in which permafrost roads are intact. The impact to the sound and view scape, to both caribou and Kaktovik residents, is predicted to extend 2 miles on either side of wellpad roads under normal winter conditions. Under Alternative C, ... Under Alternative D, the large reduction in the land available for lease sale would reduce the expected number of trucks per day during the period in which permafrost roads are intact to 2-6 trucks per day." This lack of quantitative comparisons between the different scenarios leads me, and many others, to the conclusion that this EIS document is incomplete. The entire document contains little quantitative information for comparing the alternatives. It is especially frustrating that there is an apparent effort to appear quantitative by repeating the size of the lease sales,	The hypothetical development scenario represents a good faith effort to project reasonably foreseeable oil and gas exploration, development, production, and abandonment in accordance with the Tax Cuts and Jobs Act of 2017 and 40 CFR 1508.8(b). Estimating the level of future oil and gas activity in this area is difficult at best. The analysis in the Draft EIS incorporates quantitative analysis when available. Future site-specific NEPA analyses for proposed projects would be required. A more quantified analysis is more appropriate during site-specific analysis.

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411. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	"Under Alternative B, 721,200 acres of calving habitat . . . " These repetitive statements provide almost no new information to the EIS and should not be considered quantitative contributions to the EIS once repeated. The current EIS should be considered an incomplete draft until the hundreds of shortcomings are addressed.	(see above)
412.	—	—	Alaska Department of Natural Resources	94102	5	Suggestion for specific change to an alternative	In proposing sweeping NSO and CSU measures, including proposed setbacks along rivers and streams that are larger than those developed for federally managed lands in NPR-A, BLM fails to meet the Tax Act's requirement that 2,000 surface acres shall be provided for production and support facilities.	The analysis in Chapter 3 shows that 2,000 surface acres can be provided under each action alternative for production and support facilities, thereby complying with the Tax Act requirement.
413.	—	—	Alaska Department of Natural Resources	94102	6	Suggestion for specific change to an alternative	Additionally for Alternative B, Lease Stipulation 1-Rivers and Streams is shown in Map 2-2 as being applicable to the entire Canning River Delta or "from the western boundary of the Coastal Plain to 2 miles east of the eastern edge of the active floodplain." The State of Alaska claims title to about 20,000 acres in the northwest portion of the Coastal Plain, which appears to be encompassed by Lease Stipulation 1 as it relates to the Canning River. That acreage is subject to a lawsuit brought by the State that is pending before the Interior Board of Land Appeals (IBLA 2016-109 and IBLA 2017-55). We request that BLM eliminate Lease Stipulation 1 from the Canning River and consult further with the State in the context of our cooperating agency relationship on this important issue.	The lease stipulation remains. Text has been added to Section 1.4 to further explain landownership around the Canning River delta.

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414.	—	—	Alaska Department of Natural Resources	94102	28	Suggestion for specific change to an alternative	Chapter 2, Section 2.2, Pages 2-2 and 23 Failure to disclose other regulatory control measures Pages 2-2 and 2-3 of this Chapter discuss the lease stipulations and required operating procedures for this lease sale. This section needs a discussion of the state regulatory landscape before discussing the alternatives. Otherwise it would appear that BLM's BMPs and lease stipulations are the only regulatory controls. It would be clearer if this chapter included a section covering the "Permits, Licenses and Other Approvals" as well as "Regulatory Setting for Alternatives Analysis". See pages 1-15 through 2-1 of the Point Thomson Project Final EIS for an example of what should be included.	Appendix D provides requirements of federal, state, and local laws and regulations associated with future development in the Coastal Plain.
415.	—	—	Alaska Department of Natural Resources	94102	29	Suggestion for specific change to an alternative	5 Chapter 2, Section 2.2 Lease Stipulation 1 - Rivers and Streams In Lease Stipulation 1, a mixture of 'active floodplain' and 'ordinary high water' is used to delineate setback distances from various rivers. One term should be used for all setbacks.	These terms were used intentionally to account for differing sizes of waterbodies.
416.	—	—	Alaska Department of Natural Resources	94102	31	Suggestion for specific change to an alternative	6 Chapter 2, Section 2.2 Lease Stipulation 2 - Canning River Delta and Lakes "See ROP 9 for additional requirements/standards" that is included in Alternatives B and C should also be included in Alternative D as water withdrawal could be used for seasonal activities (e.g., seismic) or exploration activities. Alternative D as written is directed at permanent facilities that are essentially prohibited in this Alternative. It would be useful to identify the minimum size waterbody that is included in the Canning River Delta area under the National Hydrography Dataset discussed in footnote 2. Is it 1 acre, 10 acres, 50 acres? This is important to know as Alternative D includes a 0.5-mile setback from any one of these waterbodies.	ROP 9 does apply to Alternative D, in addition to the objectives and requirements identified for Lease Stipulation 2 for Alternative D. The National Hydrography Dataset, maintained by the US Geological Survey, is publicly available data and can be referenced for what waterbodies are considered part of the Canning River delta, or any other waterbody in this EIS.

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417.	—	—	Alaska Department of Natural Resources	94102	32	Suggestion for specific change to an alternative	7 Chapter 2, Section 2.2 Lease Stipulation 3 - Springs/Aufeis In the Objective for Alternatives B and C, the last sentence of the Objective states "..., use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted." There are no surface occupancy buffers along streams in these alternatives; however, leasing is permitted in these areas in Alternatives B and C. In the Requirement/Standard (a) for Alternatives B and C, add the State of Alaska as an agency that would be consulted during the development of study plans of perennial springs as the state has authority over these waters. In Alternative D, Requirement/Standard (d), the aufeis field in the Jago River drainage (05N035E and 05N036E) that has a no new non-subsistence infrastructure restriction is not clearly identified in Maps 2-6 or 2-8.	As noted in footnote 1, Table 2-3 in the Final EIS, the BLM will consult with appropriate entities on site-specific projects. The aufeis field in the Jago River drainage is clearly identified on Maps 2-6 and 2-8; it also is included in the GIS data available on the project website.

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418.	—	—	Alaska Department of Natural Resources	94102	33	Suggestion for specific change to an alternative	8 Chapter 2, Section 2.2 Lease Stipulation 4 - Nearshore Marine The Requirement/Standard (NSO)(a) for all three alternatives states " Exploratory well drill pads, production well drill pads, of a CPF for oil or gas would not be permitted in coastal waters, lagoons or barrier islands within the boundaries of the Coastal Plain." In Alternative D, Requirement/Standard (NSO)(b)(iii) discusses siting of facilities that are generally associated with drilling or processing. This directly conflicts with Requirement/Standard (NSO)(a) that prohibits these types of structures. The list of facilities permitted in Requirement/Standard (NSO)(b)(iii) should match that found in Requirement/Standard (NSO)(a). In Alternative D, (TL) describes oil and gas exploration operations, such as drilling, seismic exploration and testing, that would be allowed under timing restrictions. This directly conflicts with Requirement/Standard (NSO) that states exploratory well drill pads, production well drill pads, or a CPF for oil and gas would not be permitted in coastal waters, lagoons, or barrier islands within the boundaries of the Coastal Plain.	The text of Lease Stipulations 4 and 9 has been revised for clarity.

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419.	—	—	Alaska Department of Natural Resources	94102	35	Suggestion for specific change to an alternative	10 Chapter 2, Section 2.2, Page 2-9, Table 2-2 Definition of open water season unclear The third paragraph in the Alternative D columns notes that "(TL) Oil and gas exploration operations such as drilling, seismic exploration, and testing are not allowed on the major coastal water bodies and coastal islands between May 15 and November 1 or when sea ice extent (as defined by Fetterer et al. 2017)....is beyond 10 miles of the coast each season, whichever is later." It is not clear from the second part of this statement what is being described. The first part of the statement appears to describe open water season, but the second part describes sea ice extent which is the antithesis of open water. The inclusion of the definition by Fetterer et al. does not help, since no additional information regarding that reference was provided with the EIS document. This has implications for oil spill prevention and response. Please clarify.	The text of Lease Stipulation 4 has been revised for clarity.

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420.	—	—	Alaska Department of Natural Resources	94102	36	Suggestion for specific change to an alternative	11 Chapter 2, Section 2.2, Page 2-15, Table 2-2 Non-applicability of lease stipulation to adjacent State of Alaska lands The information contained in the column for Alternative D that is labeled "Lease Stipulation 10 -Wilderness Boundary" states that "Surface occupancy including exploration and production well drill pads, structures and facilities, and gravel and ice roads would not be allowed within three miles of the southern and eastern boundaries of the Coastal Plain where they are near designated wilderness." According to Map 1-1 contained in Appendix A, this would preclude any surface occupancy on state lands adjacent to the wilderness area boundary. According to the Alaska National Interest Lands Conservation Act at 16 U.S.C.3101(c) "Only those lands within the boundaries of any conservation system unit which are public lands shall be deemed to be included as a portion of such unit. No lands, which before, on or after the date of enactment of this Act, are conveyed to the State, to any Native Corporation, or to any private party shall be subject to the regulations applicable solely to public lands within such units." This language precludes such buffers being added to the boundary with State lands adjacent to the Mollie Beatty Wilderness. Make this clarification in the text.	Since the NSO area would not establish a withdrawal, conservation system unit, or similar area, it is not precluded by Section 1326 of ANILCA.

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421.	—	—	Alaska Department of Natural Resources	94102	38	Suggestion for specific change to an alternative	13 Chapter 2, Section 2.2, Page 2-17, Table 2-2 Clarification re: State of Alaska primacy Item “d.” at the top of this page includes text that notes “Disposal of wastewater and domestic wastewater. The BLM prohibits wastewater discharges or discharges of domestic wastewater into bodies of fresh, estuarine, and marine waters, including wetlands, unless authorized by a National Pollutant Discharge Elimination System (NPDES) or State permit.” It should be noted that the State of Alaska obtained full regulatory primacy for wastewater discharge permitting in 2012. The only remaining NPDES permits within the State are found in national parks. This statement should be changed to read “unless authorized by an Alaska Pollutant Discharge Elimination System (APDES) or State permit. Please clarify.	The text of ROP 2 (section d) has been revised accordingly.
422.	—	—	Alaska Department of Natural Resources	94102	39	Suggestion for specific change to an alternative	14 Chapter 2, Section 2.2, Page 2-17, Table 2-2 Clarification of stipulation The information contained in the column for Alternative D that is labeled “Required Operating Procedure 3” states that “Refueling equipment within 500 feet of the active floodplain is prohibited.” This conflicts with a sentence later in the column which states “The BLM Authorized Officer may allow storage and operations at areas closer than the stated distances if properly designed to account for local hydrologic conditions.” The caveat “is prohibited, except where specifically allowed by the BLM Authorized Officer” should be included in the introductory sentence.	ROP 3 includes an exception that still meets the objective and is not in conflict. The proposed caveat is implicit in the requirement/standard.

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423.	—	—	Alaska Department of Natural Resources	94102	41	Suggestion for specific change to an alternative	16 Chapter 2, Section 2.2, Page 2-19, Table 2-2 Clarification of stipulation The information discussed under Required Operating Procedure 7, "Ensure that permitted activities do not create human health risks by contaminating subsistence foods." Unfortunately this section does not discuss specific contaminants, such as fugitive dust or oil spills, so there is no way of knowing how these impacts could be mitigated. If this information is incomplete or unavailable, then the lead agency must follow the requirements of 40 C.F.R. 1502.22 regarding incomplete or unavailable information.	See Appendix Q for discussions of incomplete and unavailable information. The BLM Authorized Officer has the discretion to require or authorize changes in operator activity if that activity does not meet the stated objectives.
424.	—	—	Alaska Department of Natural Resources	94102	42	Suggestion for specific change to an alternative	17 Chapter 2, Section 2.2 Page 2-19, Table 2-2 Clarification of stipulation - Water Use a. Remove the requirement that ice aggregate may be removed only from lakes at or less than 7 feet deep. If the area of ice aggregate removal is grounded, it does not matter how deep the lake is. b. Remove the requirement that ice aggregate may be removed only from lakes at or less than 5 feet deep. If the area of ice aggregate removal is grounded, it does not matter how deep the lake is. d. Include 'the total use would not exceed the respective 15 percent, 20 percent or 30 percent volume calculations above, unless recharge calculations, river overbank flooding, or a connection to a stream or river indicate recharge will replenish withdrawal amounts above these levels. Water use restrictions need to be coordinated for federal areas east of the Canning River and west of the Colville River.	There are no restrictions on ice removal in part A of this comment. There are no restrictions on ice removal in part B of this comment. The BLM has added "the total use would not exceed the respective 15 percent, 20 percent, or 30 percent volume calculations above, unless recharge calculations, river overbank flooding, or a connection to a stream or river indicate recharge will replenish withdrawal amounts above these levels."

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425.	—	—	Alaska Department of Natural Resources	94102	43	Suggestion for specific change to an alternative	18 Chapter 2, Section 2.2, Page 2-20, Table 2-2 Clarification of stipulation - Winter Overland Moves and Seismic Work D(a) As ringed seals are listed under the Endangered Species Act, protective measures by the NOAA Fisheries will likely be applied across all alternatives. Make all alternatives the same, eliminate D(a) and add (c) describing the requirements for ringed seals. Simplify the ringed seal measures by stating measures developed and approved by NOAA Fisheries will be adopted by the BLM for the protective measures for ringed seals under this ROP.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
426.	—	—	Alaska Department of Natural Resources	94102	44	Suggestion for specific change to an alternative	19 Chapter 2, Section 2.2, Page 2-22, Table 2-2 Clarification of stipulation - Winter Overland Moves and Seismic Work ROP 15 should be merged with ROP 11 as both discuss the use of snow fences.	The requirement/standard is included under both ROPs 11 and 15 in order to meet each of the ROP's specific objectives.
427.	—	—	Alaska Department of Natural Resources	94102	45	Suggestion for specific change to an alternative	20 Chapter 2, Section 2.2, Page 2-22, Table 2-2 Clarification of stipulation For clarity, consider adding 'amendments of snow and/or ice chips from approved sources' as an allowable activity to ROP 10 and ROP 11 for all alternatives. This is a common practice for snow trail and ice road construction in order to meet snow depth requirements and protect the tundra.	Any activities that are not listed as precluded under ROPs 10 and 11 may be considered during site-specific authorization.
428.	—	—	Alaska Department of Natural Resources	94102	46	Suggestion for specific change to an alternative	21 Chapter 2, Section 2.2, Page 2-25, Table 2-2 Clarification of stipulation - Exploration Drilling Requirement/Standard: Construction of a gravel road for permanent oil and gas facilities would be prohibited for exploratory drilling. Change to: "Construction of a gravel road would be prohibited for exploratory drilling" to simplify and clarify the probable intent of the Requirement/Standard.	The text of ROP 17 has been edited for clarity.

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429.	—	—	Alaska Department of Natural Resources	94102	47	Suggestion for specific change to an alternative	22 Chapter 2, Section 2.2, Page 2-27, Table 2-2 Clarification of stipulation - Pipelines/Roads Required Operating Procedure 23c. Add "An exception, modification, or waiver to the pipeline/road separation requirement may be granted if separation alternatives are not feasible or practicable.	The text of ROP 23c has been revised for clarity.
430.	—	—	Alaska Department of Natural Resources	94102	48	Suggestion for specific change to an alternative	23 Chapter 2, Section 2.2, Page 2-27, Table 2-2 Clarification of stipulation - Gravel Mines For Alternative D (a), consider including gravel mine sites within the active floodplains of the Canning, Sadlerochit, Hulahula and Aichilik rivers as mine sites in these floodplains or outside of the floodplain but connected to a river channel may provide additional overwintering fish habitat and final water volumes would easily be recharged on a yearly basis. Appropriate site selection criteria would need to be developed for these in-floodplain sites.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
431.	—	—	Alaska Department of Natural Resources	94102	49	Suggestion for specific change to an alternative	24 Chapter 2, Section 2.2, Page 2-29, Table 2-2 Clarification of stipulation - Nesting Raptors Requirement/Standard (b) regarding instream mining and raptor cliffs needs clarification regarding what bank heights define 'river bluffs' as well as the proximity to a cliff/bluff that would initiate the requirement to conduct a hydrological study regarding the potential instream mining effects to the river bluffs.	A site-specific analysis would identify areas where sand or gravel extraction would not be allowed. A hydrological study would be conducted by the operator should the operator desire to extract sand or gravel from an active river or stream channel with bluffs.

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432.	—	—	Alaska Department of Natural Resources	94102	50	Suggestion for specific change to an alternative	25 Chapter 2, Section 2.2, Page 2-32, Table 2-2 Clarification of regulatory roles The information discussed under Required Operating Procedure 35 “Ensure ongoing and long-term reclamation of land to its previous condition and use” discusses BLM approved reclamation plans for well pads, production facilities, access roads and airstrips. It is not clear if this reclamation work includes well closure and capping. If well closure and capping is involved, proper plugging and abandonment of well is governed by Article 2 of the Alaska Oil and Gas Conservation Commission (AOGCC) regulations at 20 AAC 25.105.	. The BLM believes that the objective is appropriate. Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).
433.	Edward	Rexford	Native Village of Kaktovik	95607	11	Suggestion for specific change to an alternative	NVK understands that the Coastal Plain EIS for Leasing's purpose is to analyze the impacts of a leasing program at a high level and subsequent National Environmental Policy Act (NEPA) processes for on the ground activities will be much more robust and technical and will likely involve further studies on wildlife and natural resources. NVK recommends including language in the Final EIS for leasing that these studies should occur collaboratively between agencies to minimize impacts of multiple studies on subsistence activities. Scientific studies often require low-flying aircraft and other invasive activities that can have a negative impact on hunting, fishing, and trapping.	The BLM will consult with the appropriate entities on future oil and gas activities, including study development. See footnote 1, Table 2-3 in the Final EIS.
434.	Harry K.	Brower Jr.	North Slope Borough	95612	7	Suggestion for specific change to an alternative	BLM should only include the following river setbacks: (1) 0.5 mile on either side of the Okpilak River; (2) 0.5 mile on either side of the Hulahula River; (3) 0.5 mile on the Staines-Canning River along the east side of the Coastal Plain border; and (4) 1 mile around Fish Hole One.	Setback distances were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.

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435.	Harry K.	Brower Jr.	North Slope Borough	95612	9	Suggestion for specific change to an alternative	Alternative B with modifications to the timing limitation is preferred. BLM should revise the area subject to the timing limitation to reflect the location where calving predominantly occurs based on the most current wildlife surveys. BLM also should reserve the ability to reduce or remove the timing restriction if calving is not occurring in a particular area.	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulations are added to the primary calving area because this area is used more frequently than other portions of the program area. Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
436.	Harry K.	Brower Jr.	North Slope Borough	95612	13	Suggestion for specific change to an alternative	In Lease Stipulation 9, for Alternative C, BLM would require that the lessee/operator/contractor consult with the Alaska Eskimo Whaling Commission, the Borough, and local whaling captains' associations to minimize impacts on subsistence whaling and other subsistence activities of the communities of the North Slope. This lease stipulation should be included in Alternative B and, in addition to open water activities, should be expanded to apply to any activities that could potentially impact subsistence whaling and other subsistence activities of the communities of the North Slope.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA. Under all alternatives, the BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.
437.	Harry K.	Brower Jr.	North Slope Borough	95612	14	Suggestion for specific change to an alternative	Finally, when siting any oil and gas facilities, we suggest that BLM encourage the use of existing sites that have already been subject to development activities. For example, this could include Distant Early Warning Line sites. By co-locating facilities or by reusing such areas, the impacts of development under the Leasing Program could be reduced.	ROP 21 discusses minimizing impacts of the development footprint, including collocation of facilities.

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438.	Harry K.	Brower Jr.	North Slope Borough	95612	16	Suggestion for specific change to an alternative	ROP 7 The design and implementation of the monitoring study of contaminants in subsistence foods should be coordinated with the Borough's Department of Wildlife Management.	Under all alternatives, the BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.
439.	Harry K.	Brower Jr.	North Slope Borough	95612	17	Suggestion for specific change to an alternative	ROP 8 The Borough notes that fish in some streams have been observed to have fish mold. The ROP should be revised to require that streams be evaluated to determine if fish mold is present prior to any water withdrawals to prevent potential contamination of other streams during oil and gas activities.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
440.	Harry K.	Brower Jr.	North Slope Borough	95612	18	Suggestion for specific change to an alternative	ROP 9 For the guidelines on winter water use, the Integrated Activity Plan (IAP) for the National Petroleum Reserve Area in Alaska (NPR-A) includes a withdrawal limit of 35 percent for lakes with no fish present. BLM should provide an explanation for the proposed imposition of a 20 percent limitation on such lakes in the DEIS.	The winter water withdrawal limit is specific to the Coastal Plain landscape. It was developed using best available science in conjunction with review by cooperating agencies and resource experts to minimize impacts on water resources.
441.	Harry K.	Brower Jr.	North Slope Borough	95612	19	Suggestion for specific change to an alternative	ROP 10 As part of Alternative B, BLM could include requirement (b) from Alternative D. This would be consistent with the NPR-A IAP and would provide adequate protection for the species. The other required measures included in Alternative D are overly restrictive and unnecessary.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA. All operators will be subject to regulations and stipulations under the Endangered Species Act and MMPA.

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442.	Harry K.	Brower Jr.	North Slope Borough	95612	21	Suggestion for specific change to an alternative	ROP 35 Alternative B is preferred. BLM should require lessees to post a bond to ensure adequate funding for spill response, cleanup, and eventual decommission, remediation, and removal (DR&R). DR&R must be addressed early, and negotiating appropriate DR&R measures with stakeholders should be an ongoing process throughout development and production as these activities will likely continue until late this century. DR&R measures should not be put in place at the planning phase only to be left unaddressed for decades.	Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain). The reclamation plan will be developed in coordination with applicable federal, state, and local agencies (see footnote 1, Table 2-3 in the Final EIS).
443.	Harry K.	Brower Jr.	North Slope Borough	95612	22	Suggestion for specific change to an alternative	ROP 38 BLM should revise the ROP to also include a prohibition on fishing by lessees/operators/contractors	The BLM has revised the text of ROP 38.
444.	Harry K.	Brower Jr.	North Slope Borough	95612	23	Suggestion for specific change to an alternative	Thus, BLM must reduce and minimize the number of helicopter surveys, while still requiring the collection of adequate information about subsistence resources. There are likely novel methods that could be used, such as remote sensing, drones, etc., which would minimize disturbance but still allow for the collection of information. We encourage BLM to involve the Borough in discussions about those methods and others that could be employed for scientific studies.	Under all alternatives, the BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-3 in the Final EIS.

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445.	Greta	Burkart	—	96243	19	Suggestion for specific change to an alternative	Assuming the maximum allowable surface disturbance in the tax act will be the surface disturbance is not logical if there are efforts to minimize impacts. It does not make sense that 200,000 acres of disturbed area (plus of 305 +/- 5 acres of disturbed areas due to gravel mining) would occur in all action alternatives. While congress may have made this a maximum level of surface disturbance, it was not defined as minimum level of disturbance. If there is a responsible attempt to reduce impacts, it does not make sense 200,000 acres of surface disturbance would occur under all alternatives. For example, it does not make sense that 200,000 acres of disturbance would be necessary when the area available for leasing is not as sprawling as it is in other options. To minimize unnecessary impacts due to unnecessary surface disturbance, an analysis should be conducted to determine what acreage of surface disturbance is actually necessary under each action alternatives.	Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act.

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446.	Greta	Burkart	—	96243	20	Suggestion for specific change to an alternative	Transportation infrastructure and material requirements will vary between alternatives if there really are efforts to minimize surface disturbance in each action alternative. It does not make sense to assume that the same level of surface disturbance (200,000 acres of surface disturbance plus 308-315 acres of gravel mining-related surface disturbance) will occur under each alternative. For example, one alternative involves no surface occupancy and no leasing in a substantial area and another alternative involves surface occupancy and leasing across a much broader sprawling area which would require more roads and material sources. The comparison of alternatives should attempt to include an accurate estimate of surface disturbance and infrastructure acreage as they will both have substantial long-term impacts to hydrology and water quality, vegetation, soils, etc. Appendix Band analyses of resources impacted by surface disturbance and infrastructure should use these estimates when assessing impacts.	Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act. Gravel mines are now included in the 2,000-acre definition (see Section 1.9.1).
447.	Greta	Burkart	—	96243	24	Suggestion for specific change to an alternative	Realistic forecasting of gravel material needs and a cap on gravel removal and surface area disturbance is necessary to fully understand the potential impacts to vegetation, soils, water, fish, recreation, etc under different alternatives. The analysis presented in appendix B is unreasonably crude and does not provide adequate information.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

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448.	Greta	Burkart	—	96243	26	Suggestion for specific change to an alternative	To properly evaluate alternatives and consider the need for stipulations and ROPs, a much more rigorous analysis of gravel material needs, and potential source locations is required. The currently analysis stems from Appendix B, which involves an extremely crude analysis that one might think was done in five minutes on the back of an envelope. More accurate estimates are also critical for evaluating impacts of gravel mining to water resources, vegetation, soils, fish, recreation, etc under all alternatives. Given the widespread importance and implications, a much more meaningful analysis should be conducted. Also, make a map of potential gravel mining sites under all alternatives. This is particularly important to illustrate that the current No Surface Occupancy stipulations allow for gravel removal which is likely one of the most destructive and irreparable oil-development related activities.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.
449.	Greta	Burkart	—	96243	29	Suggestion for specific change to an alternative	[comment:96243-29; 190.07]CommentsGMT SEIS provided readers with proposed plans for bridges and pipeline access road routes. The EIS for oil leasing in the Arctic Refuge does not have similar information that would allow readers to better assess potential impacts of development. Omissions such as this make it impossible to adequately evaluate impacts and effectiveness of mitigation strategies in a landscape that is very different from those in the NPRA.[comment end]	The GMT SEIS is a project-specific analysis. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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450.	Greta	Burkart	—	96243	30	Suggestion for specific change to an alternative	Residual risk after application of mitigation strategies must be clarified--> To properly assess residual risk, there is a need to verify that mitigation strategies are effective. Verification of the effectiveness of mitigation strategies is largely absent for the stipulations that the GMT2 SEIS claims will "largely" mitigate for all impacts to marine and freshwater fishes. There is no evidence from statistically valid studies that documents the effectiveness of these studies, so tiering-off to these NPRA documents really does not provide with an adequate impact analysis for the Arctic Refuge 1002 Area.	The GMT SEIS is a project-specific analysis. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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451.	Greta	Burkart	—	96243	34	Suggestion for specific change to an alternative	A major problem with oil development on the North Slope has been the lack of data to assess what the cumulative impacts of oil and gas development are (see National Research Council Report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003)). Standards for effectiveness monitoring need to be defined in stipulations or there needs to be a stipulation that includes development of an effectiveness monitoring plan (and centralized publicly accessible database) that would be prepared in consultation with the USFWS and implemented by lessee/operator/contractor. At a minimum the following requirement should be met for all effectiveness monitoring programs: statistically valid sampling designs with clearly defined levels of inference and change detection capabilities. Without a properly designed long-term effectiveness monitoring program and publicly accessible database, there is no way to detect impacts and employ adaptive management techniques. When pre-development monitoring will not occur, general methods for selecting control sites using a statistically valid approach is necessary. Requirements for a research and monitoring program need to be clearly defined in this EIS.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
452.	Greta	Burkart	—	96243	35	Suggestion for specific change to an alternative	No surface occupancy needs to pertain to gravel mining, drilling, reinjection of hazardous wastes as well. Gravel mines impact physical, chemical, and biological properties of water resources in perpetuity. Drilling and reinjection of hazardous wastes endanger aquatic ecosystems, especially groundwater ecosystems and should not be permitted in NSO areas because of the special resources in these areas.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site-specific impacts.

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453.	Greta	Burkart	—	96243	36	Suggestion for specific change to an alternative	The objectives for alternative B and C should be the same as that for alternative D (e.g. include recreation and hunting) and should include wilderness and scenic values important for recreation. Maintaining recreational value supports the National Wildlife Refuge Improvement Act.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
454.	Greta	Burkart	—	96243	37	Suggestion for specific change to an alternative	To meet the objective and protect Refuge purposes, gravel mining sites cannot be in the NSO. Gravel mining disturbs flow paths, water quality, and can alter the natural diversity of fisheries by altering complete balance and predator prey relationships. It would not be possible to meet his objective if gravel mining is allowed in the NSO areas.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site-specific impacts. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.

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455.	Greta	Burkart	—	96243	38	Suggestion for specific change to an alternative	River setbacks are not adequate to allow for continuation of the primary purposes of the Refuge. The following are exceptional rivers with exceptional fisheries, recreation, subsistence, cultural, or other values: · The Hulahula should have a 4-mile setback under all alternatives to protect its values and purposes. It provides the most important winter subsistence fishery in the 1002 Area. It is also an important recreational river and recommended Wild River (Arctic Refuge CCP 2015). · The Canning River should have a 3-mile setback to protect the important fisheries, recreation and cultural values of this eligible Wild River. For more information see Arctic Refuge CCP 2015. · The Aichillik River, which flows along the Wilderness boundary, should have at least a 3-mile setback under all alternatives to protect its important Wilderness and recreational value. For more information see Arctic Refuge CCP 2015. · The Sadlerochit River and Itkilyariak Creek Spring - complex should have a 3-mile setback in all alternatives due to its cultural significance and unique terrestrial and aquatic communities. The Sadlerochit River and Itkilyariak Creek Spring - complex has a unique endemic population of dwarf Dolly Varden and is also an important subsistence use area. For more information see Arctic Refuge CCP 2015. · The Jago and Okpilak Rivers should have 2-mile setbacks in alternative B and C and 3-mile setbacks in Alternatives D to protect their outstanding resource values. For more information see Arctic Refuge CCP 2015. · Spring-fed rivers are the most unique and productive habitats in the Refuge. In alternatives B and C, they should have a minimum setback of 1-mile. In alternative D they should have a minimum setback distance of 2-miles.	Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.

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456.	Greta	Burkart	—	96243	39	Suggestion for specific change to an alternative	Alternative B and C (Lease stipulation 2) should require setback distances for the Canning Area lakes because of their special values and to help meet the objective of Stipulation 2.	The requirements vary among the alternatives to facilitate analysis of the different management options.
457.	Greta	Burkart	—	96243	40	Suggestion for specific change to an alternative	Spring-fed river systems are the most important, productive and unique aquatic habitats in the Refuge. In addition, they provide benefits to terrestrial wildlife and subsistence users. Alternatives B, and C should have the same requirements as Alternative D.	The requirements vary among the alternatives to facilitate analysis of the different management options.
458.	Greta	Burkart	—	96243	42	Suggestion for specific change to an alternative	Section/Description Lease Stipulation 3, Alternative B/C/D Comments The perennial springs that feed Itkilyariak Creek are part of the Sadlerochit Spring system. All alternatives should include protection of the entire Itkilyariak-Sadlerochit spring system.	Current springs/aufeis protections were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. Variation in protections among the alternatives remains in order to facilitate analysis of the different management options.
459.	Greta	Burkart	—	96243	43	Suggestion for specific change to an alternative	Section/Description Lease Stipulation 3, Alternative B/C/D Comments The standard requiring studies prior to drilling should "ensure drilling or injection of wastes will not alter the natural flow or impair the water quality of perennial springs"	The BLM made the following edit to Lease Stipulation 3 (section a): "...and waste injection wells will not contaminate any perennial springs."
460.	Greta	Burkart	—	96243	44	Suggestion for specific change to an alternative	Section/Description Lease Stipulation 3, Alternative B/C/D Comments No surface occupancy needs to prohibit gravel extraction. Gravel mining would alter ground and surface water flow and impact the natural fish diversity.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim; however, all future projects would be analyzed for site-specific impacts.

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461.	Greta	Burkart	—	96243	45	Suggestion for specific change to an alternative	Lease Stipulation 3, Alternative B/C/D Comments In areas where no leasing is allowed, the following should be prohibited as well: gravel mining, roads, infrastructure and other disturbances that support development.	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Therefore, if an operator were required to access resources through a no-lease area, prohibiting such access would not comply with the Tax Act.
462.	Greta	Burkart	—	96243	46	Suggestion for specific change to an alternative	Section/Description Addition to Lease Stipulations Comments To meet water quality purposes of the Arctic Refuge, a lease stipulation to protect lakes in the 1002 area should be included. This is especially important since lakes are relatively rare. Include the following stipulation for all alternatives: "Generally, permanent oil and gas facilities, including gravel pads, roads, airstrips, gravel mines, and pipelines, are prohibited on the lake or lakebed and within 0.25 mile of the ordinary high watermark of any lake that may have fish."	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.
463.	Greta	Burkart	—	96243	48	Suggestion for specific change to an alternative	Lease Stipulation 4, Alternative B/C/D Comments At a minimum, stipulations in alternative D should be applicable under alternative B and C as well.	The requirements vary among the alternatives to facilitate analysis of the different management options.
464.	Greta	Burkart	—	96243	49	Suggestion for specific change to an alternative	ROP 3 Comments The scarcity and purposes of the Arctic Refuge warrant greater setback distances for fueling stations and fueling activities. 2,000 feet should be a minimum distance in alternative DI. In alternative B and C the minimum setback distance should 1,000.	Current setbacks were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.

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465.	Greta	Burkart	—	96243	50	Suggestion for specific change to an alternative	ROP 3 Comments To minimize the potential for impacts of contaminant spills, there must be required operating procedures for containment under all alternatives. Include the following in ROP 3 for all alternatives: 1) containment of fuel over 200 gallons should be bear-proof, 2) spill containment systems for all fuel storage should be capable of containing 150% of the stored volume 3) "Except during overland moves, fuel, other petroleum products, and other liquid chemicals designated by the authorized officer that in total exceed 210 gallons shall be stored within an impermeable lined and diked area or within approved bear-proof alternate storage containers" and 4) All temporary and permanent fueling Stations shall be lined or have impermeable protection to prevent fuel migration to the environment from overfills and spills. Note - NPR-A EIS 2012 ensures containment is considered	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

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466.	Greta	Burkart	—	96243	51	Suggestion for specific change to an alternative	Section/Description ROP 8, Standard Comments Change the ROP to the following: "Withdrawal of unfrozen water or ice aggregates from rivers, streams, and springs during winter is prohibited. If it has been shown that no impacts to hydrology (including hydrologic flow paths) at breakup, channel morphology, and/or impacts to fish and invertebrates and their habitat will occur, withdrawal of up to 20% of ice aggregate from a grounded area 4-feet deep may be authorized on a site-specific basis if it is determined that such removal will not impact natural hydrologic regimes or habitats. This will be determined by the BLM authorizing officer in collaboration with the USFWS. Monitoring of hydrology and channel morphology prior to and after removal may be required. The design of the monitoring effort must be peer-reviewed to ensure the ability to detect changes in hydrology, substrate, and morphology."	The State of Alaska has the responsibility to authorize water withdrawals, ensuring sufficient water quality and quantity. See footnote 1, Table 2-3 in the Final EIS.
467.	Greta	Burkart	—	96243	52	Suggestion for specific change to an alternative	ROP 9 Comments Rationale for different withdraw volumes compared to NPR-A EIS: 1) impacts on species and habitat are unquantified (NRC 2003), especially impacts of removal of entire permitted volume; 2) lakes are relatively rare in the Arctic Refuge thus a much larger proportion of lakes will be impacted by water withdraw which would have more significant impacts to fish and wildlife in the area; 3) because lakes are rare, companies would be more likely to withdraw fully permitted volume; 4) the original and primary ANILCA purpose of the Refuge is to maintain adequate water quality and quantity to support fish and wildlife and their habitat. Furthermore, impacts of water withdrawal on soils, shorebird habitat (wet meadow zones, and invertebrates in the NPR-A have never been assessed. The few studies	ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
467. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	of the impacts of water withdrawal on hydrology and chemistry did not have a statistical design that allowed for change detection or inference to other lakes, especially lakes in regions as far away as the Arctic Refuge. During these studies, only a small fraction of the permitted water/ice was withdrawn, allowing no assessment of the impacts when the permitted volume is withdrawn. Even when only a small fraction of the permitted volume of water was removed, one of the few lakes studied did not fully recharge at snow melt. Other studies indicate that dissolved oxygen in untapped lakes is typically close to dissolved oxygen thresholds that, if crossed, would have severe impacts on fish and wildlife habitat. These findings suggest that additional declines in oxygen due to water withdrawal could have a severe negative impact on fish and wildlife habitat. Based on these studies and the Refuge's primary purpose to maintain adequate water quality and quantity, more conservative guidelines need to be in place. Change requirements a-d TO THE FOLLOWING FOR ALL ALTERNATIVES: "a. Lakes with sensitive fish (i.e., any fish except ninespine stickleback or Alaska blackfish): unfrozen water available for withdrawal is limited to 10% of calculated volume deeper than 7 feet; only ice aggregate may be removed from lakes that are 5.7-feet deep. b. Lakes with only non-sensitive fish (i.e., ninespine stickleback or Alaska blackfish): unfrozen water available for withdrawal is limited to 20% of calculated volume deeper than 7 feet; only ice aggregate may be removed from lakes that are 57-feet deep. c. Lakes with no fish present, regardless of depth: water available for use is	(see above)

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467. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	limited to 20% of total lake volume. d. In lakes where unfrozen water and ice aggregate are both removed, the total use shall not exceed the respective 10%, 20%, or 20% volume calculations.	(see above)
468.	Greta	Burkart	—	96243	53	Suggestion for specific change to an alternative	ROP 9 Comments There are no requirements for determining fish presence prior to activities that could impact fish. Add the following requirement: Sensitive and nonsensitive fish species will be assumed to be present until surveys with 95% detection probability have been conducted during the appropriate seasons.	The State of Alaska requirements would address impacts on fish present during a site-specific analysis.
469.	Greta	Burkart	—	96243	54	Suggestion for specific change to an alternative	ROP 9 Comments The following should be included for all alternatives. Additional modeling and monitoring of lake recharge shall be required to ensure natural hydrologic regime, water quality, and aquatic habitat for migratory birds and macroinvertebrates is maintained. Data from these efforts shall be stored in a geodatabase with appropriate metadata and be accessible to the USFWS and the general public	The requirements vary among the alternatives to facilitate analysis of the different management options.

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470.	Greta	Burkart	—	96243	55	Suggestion for specific change to an alternative	ROP 9 Comments Because water withdrawal from ice-covered lakes can have severe negative impacts on a wide range of species and habitats there is a need for a BMP that puts a cap on the percentage of lakes in each area that can be impacted by water withdrawals. Add the following requirement for all alternatives: a) Up to 20% of lakes in each class (1. deep isolated, 2. deep connected, 3. shallow isolated, and 4. shallow connected) in each major ecoregion and watershed (HUC8) can be tapped annually, b) Up to 30% of lakes in each class in major ecoregion and watershed (HUC8) can ever be tapped unless statistically valid studies with the appropriate level of inference indicate there will be no impacts to hydrology, fish and wildlife, and their habitat.	The State of Alaska has the responsibility to authorize water withdrawals, ensuring sufficient water quality and quantity.
471.	Greta	Burkart	—	96243	56	Suggestion for specific change to an alternative	ROP 9 Comments Under all alternatives, there is a need for stronger protections for isolated lakes. These isolated lakes are important for shorebirds and may harbor particularly dense and unique macroinvertebrate populations. Water quantity and quality in these habitats is important to protecting fish and wildlife diversity and habitats in the Refuge. Add the following to all alternatives: e) In isolated lakes with limited recharge capabilities, water available for use is limited to guidelines established in ROP 10 or 30% of the estimated snowmelt recharge volume, whichever is lesser.	The State of Alaska has the responsibility to authorize water withdrawals, ensuring sufficient water quality and quantity.

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472.	Greta	Burkart	—	96243	57	Suggestion for specific change to an alternative	ROP 11 Comments Requirement/standard (a) for alternative D should be changed to the following to help ensure protection: "Snow depth and density and vegetation data should be collected where ground operations will actually be occurring. There is a great deal of evidence that shows how variable these conditions are even within the same watershed. The exact dates should be determined by the BLM authorized officer in coordination with the USFWS." For all Requirements/Standards that need to be approved by the BLM authorized official, the decision on approval should be made in coordination with USFWS subject matter experts familiar with the area. Winter ground operations are known to have negative impacts on the tundra. These impacts have cascading effects on water quantity, water flow paths, and habitat quality for fish and wildlife. To protect Refuge resources, the standards for ROP 11, Alternative D should also be applied to B and C.	See footnote 1, Table 2-3 in the Final EIS. The requirements vary among the alternatives to facilitate analysis of the different management options.
473.	Greta	Burkart	—	96243	58	Suggestion for specific change to an alternative	ROP 12 Comments There should be a requirement to monitor effectiveness of breaching at crossings to ensure impacts to fish and hydrology do not occur. The rationale for this is that there is only limited information about the effectiveness of this ROP in the NPR-A and the effectiveness of this ROP has not been assessed in the 1002 Area, which has very different terrain and hydrology compared to NPRA.	If an objective cannot be met, then a waiver, exception, or modification would need to be considered.

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474.	Greta	Burkart	—	96243	59	Suggestion for specific change to an alternative	ROP 15 Comments Permitting should occur in consultation with the USFWS subject matter experts who are familiar with polar bear denning habitats and snow and hydrologic modeling. Distribution of denning habitat, snow and hydrologic monitoring should be considered in an analysis of the potential impacts of snow fencing.	See footnote 1, Table 2-3 in the Final EIS. This level of specificity would be determined at the project-level authorization.
475.	Greta	Burkart	—	96243	60	Suggestion for specific change to an alternative	ROP 16 Comments Non-fish bearing systems provide important habitat that supports invertebrates, migratory birds and other wildlife. Change requirement to the following for all alternatives to help ensure protection of fish, invertebrates, riparian vegetation and water resources: Exploratory drilling is prohibited upon or within 100-year flood plain of streams and rivers, on or within 2,000 feet of the ordinary high water mark of potential fish-bearing lakes, and 1,000 feet as measured from the ordinary high watermark of non- fish-bearing waterbodies unless further setbacks are stipulated under Lease Stipulations. Any consideration of exploratory drilling within these areas should be assessed in consultation with USFWS subject matter experts with knowledge of aquatic resources in the 1002 Area.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA. See footnote 1, Table 2-3.
476.	Greta	Burkart	—	96243	61	Suggestion for specific change to an alternative	ROP 19 Comments The scarcity and purposes of the Arctic Refuge warrant greater setback distances for protection of fish and wildlife. The importance of fishless lakes in supporting unique invertebrate communities and migratory bird populations warrant protections for fishless lakes. Permanent facilities should be at least 2,000 feet from the ordinary high-water mark of fish-bearing lakes and 1,000 from ordinary high water in other lakes.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7.
477.	Greta	Burkart	—	96243	62	Suggestion for specific change to an alternative	ROP 10 Comments To protect fisheries and other wildlife requirements in alternative D must be applied to all alternatives.	The requirements vary among the alternatives to facilitate analysis of the different management options.

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478.	Greta	Burkart	—	96243	63	Suggestion for specific change to an alternative	ROP 22 Comments Add the following to requirements: d) 5 years of data on stream flow, seasonal patterns in lake connectivity, and sheet flow shall be collected prior to planning bridges and culverts. These data will be stored in a centralized database and available to the general public. Standard "C" should ensure crossing structures are designed for ice-dam flooding as well.	Additional requirements, including those associated with infrastructure in support of oil and gas development, can more realistically be added when the BLM receives an application to permit such infrastructure.
479.	Greta	Burkart	—	96243	64	Suggestion for specific change to an alternative	ROP 24 Comments The impacts and severity of gravel mining on water resources in active floodplains will be severe and long-lasting. Creating deep water habitats that are connected to rivers could alter the outcome of competitive interactions between species and predator-prey relationships that are important for maintaining naturally occurring fish populations. Prior to these activities extensive studies should be undertaken. In all alternatives the following standards should apply: no mining sites in the 100-year floodplain of rivers with anadromous, freshwater, or endemic fisheries (e.g., Canning, Sadlerochit, Tamayariak, Itkilyariak, Aichillik, Hulahula).	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim; however, all future projects would be analyzed for site-specific impacts.
480.	Greta	Burkart	—	96243	65	Suggestion for specific change to an alternative	ROP 24 Comments Requirement/Standard (e) should apply to alternatives to help ensure the protection of water resources.	The requirements vary among the alternatives to facilitate analysis of the different management options.
481.	Greta	Burkart	—	96243	66	Suggestion for specific change to an alternative	ROP 24 Comments There is a need for mining restoration plans (see 2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003). Add the following requirement to each alternative: Each proposed mine site shall have a USFWS-approved restoration plan and effectiveness monitoring plan prior to site approval and construction. Restoration effectiveness monitoring shall continue for ten years following completion of restoration.	It is the BLM's responsibility for implementation of the oil and gas program. See footnote 1, Table 2-3 in the Final EIS.

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482.	Greta	Burkart	—	96243	67	Suggestion for specific change to an alternative	ROP 28 Comments The requirement should include cooperation with the USFWS to assess the information necessary for a plan.	The BLM will consult with all applicable federal, state, and local agencies. See footnote 1, Table 2-3 in the Final EIS.
483.	Greta	Burkart	—	96243	68	Suggestion for specific change to an alternative	ROP 35 Comments The lack of adequate restoration plans and adequate bonds to cover reclamation of areas impacted by oil and gas development on the North Slope is a major problem (2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003)). Restoration standards need to be set in stipulations in this EIS. It should also be clearly stated what level of restoration will be required before land is no longer considered part of the infrastructure development cap. Restoration plans should be required and reviewed prior to issuing a lease and should be approved by the BLM and USFWS. All alternatives should include requirement for plans to include ecosystem restoration to restore pre-development stability, visual, hydrologic, vegetation, wilderness, and habitat conditions and Wild and Scenic River eligibility conditions.	Under all alternatives, ROP 35 requires operators to restore the land's previous hydrological, vegetation, and habitat condition through implementation of an approved reclamation plan.
484.	Greta	Burkart	—	96243	86	Suggestion for specific change to an alternative	Appendix B Comments The lack of adequate restoration plans and adequate bonds to cover reclamation of areas impacted by oil and gas development on the North Slope is a major problem (2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003)). Restoration standards need to be set in stipulations in this EIS. It should also be clearly stated what level of restoration will be required before land is no longer considered part of the infrastructure development	Under all alternatives, ROP 35 requires operators to restore the land's previous hydrological, vegetation, and habitat condition through implementation of an approved reclamation plan.

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485.	Brook	Brisson	Trustees for Alaska	96981	46	Suggestion for specific change to an alternative	Relatedly, BLM should also modify its alternatives analysis to consider whether additional areas should be closed to exploration activities, particularly in areas where seismic damage is likely to be exacerbated because of the topography or other concerns, or where those areas will be closed to leasing. For example, in the draft EIS, BLM asserts for purposes of Alternative D that it would close 476,600 acres of caribou calving habitat to lease sales, but would still allow seismic activity over the entire program area.158 BLM needs to modify Alternative D so it does not allow seismic exploration in areas that are closed to leasing.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. A site-specific NEPA analysis would be done for any proposed seismic explorations.

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486.	Karimah	Schoenhut	Sierra Club	97751	50	Suggestion for specific change to an alternative	since the stipulation allows it to be waived if "the BLM Authorized Officer approves alternative measures," and does not in any manner prescribe limits on that approval, a process for that approval, what "alternative measures" may be considered, or limitations on the circumstances under which such an approval may be SOUght,85 BLM cannot rationally rely on it to avoid analyzing the impacts of permanent facilities being developed in and across that portion ofthe Coastal Plain.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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487.	Karimah	Schoenhut	Sierra Club	97751	51	Suggestion for specific change to an alternative	[Lease Stipulation 5] this stipulation is only imposed under Alternative D. The other action alternatives for Lease Stipulation 5 stipulate a requirement for compliance with the ESA and MMP A in lieu of actually setting forth protective measures. But BLM cannot satisfy its obligations for analysis under NEP A merely be deferring to future requirements that mayor may not be imposed through the actions of other agencies. And consequences that do not cause jeopardy to the whole species or no more than a negligible impact to the whole stock do not necessarily amount to insignificant impacts for the purposes of a NEPA analysis of how polar bears using the Refuge will be affected by the proposed alternatives.	All alternatives must comply with the Endangered Species Act and MMPA as a requirement of federal law, which provides certainty in the analysis.
488.	Sophie	Minich	Cook Inlet Region, Inc	97926	2	Suggestion for specific change to an alternative	Alternative B, Lease Stipulation 1 states that "essential pipeline and road crossings" will be permitted on a case-by-case basis, which may present ambiguity to an operator. A potential lessor is provided no certainty that their lease would be perfected. The BLM is encouraged to provide additional processes and guidance that would provide assurance to lessors that their lease investments would be developable.	Additional text has been added to Table 2-3 providing additional details on the waiver, exception, and modification process.

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489.	—	—	United States Fish and Wildlife Service	97942	1	Suggestion for specific change to an alternative	As the land and surface estate manager, the Service would like the importance of consultation between the BLM Authorized officer and the Service in implementing the oil and gas program to be more explicit when access to the subsurface may affect the surface resources managed by the USFWS. We recommend that relationship be defined in Section 1.7 and throughout Section 2. We suggest the following language: "Where oil and gas program activities may affect surface resources managed by the USFWS, the BLM Authorize officer will consult with the USFWS to reach consensus on decisions. This can include approval of a variety of instruments for activity implementation, including but not limited to plan approval, permits, exceptions, modifications, and waivers." Additionally, Table 2-2 on page 2-4 should be revised where it states that exceptions could be made by the Authorized Officer to indicate that exceptions would be made by consensus of the BLM Authorizing Officer and the USFWS designated Officer when pertaining to surface resources managed by the USFWS. Consensus would not apply to decisions relating to oil and gas activities that do not affect surface resources managed by the USFWS.	Although the BLM intends to consult with the USFWS as noted in footnote 1 of Table 2-2 of the Final EIS, Section 20001(a)(2) of the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions for lands within the Coastal Plain.

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490.	—	—	United States Fish and Wildlife Service	97942	2	Suggestion for specific change to an alternative	Given the overlap of potential lease blocks and polar bear denning habitat, we recommend ensuring that surveys of polar bear denning habitat are required under all alternatives and development scenarios. We also emphasize that it would be important to ensure that all potential lessees are aware that they will have to consider the need to avoid disturbance of denning polar bears when they consider the temporal and spatial aspects of their operations.	ITR wording for the Coastal Plain has been removed or streamlined to explain that it is referring to the current ITRs in place west of the Coastal Plain. Verbatim mitigation, monitoring, and reporting text from the Beaufort Sea ITRs has been placed in the lease stipulations to tie into the current level of oversight that is required of operators working in polar bear country. All operators will be subject to regulations and stipulations under the ESA and MMPA. Site-specific oil and gas projects will require additional NEPA analysis, MMPA authorization, and ESA consultation, at which time additional site-specific mitigation measures would be identified.
491.	—	—	United States Fish and Wildlife Service	97942	6	Suggestion for specific change to an alternative	The DEIS could better address strategies to prevent introduction and spread of invasive species. To address invasive terrestrial plants, the Required Operating Procedures (ROPs) should recognize the use of, and include additional information about, certified weed-free gravel and supplies for road corridor construction and pipeline construction.	Additional text has been added to ROP 43.
492.	—	—	United States Fish and Wildlife Service	97942	7	Suggestion for specific change to an alternative	The DEIS should also describe how the proponent will respond to an introduction of nonnative species.	As noted under ROP 43, future site-specific authorizations would require an invasive species management plan.

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493.	—	—	United States Fish and Wildlife Service	97942	8	Suggestion for specific change to an alternative	We recommend adding a ROP under all alternatives the requirement for development of spill response plans. This is currently only found under Stipulation 4, Alternative D, Standard iv. Our recommended standard/requirement is as follows: Operators would be responsible for developing comprehensive spill prevention and response plans, including Oil Discharge Prevention and Contingency Plans and spill prevention, control, and countermeasure plans as well as to maintain adequate oil spill response capability to effectively respond during periods of ice, broken ice, or open water. Plans should be based on the statutes, regulations, and guidelines of the EPA, Alaska Department of Environmental Conservation (ADEC), and the Alaska Oil and Gas Conservation Commission (AOGCC), and well as ROPs, stipulations, and policy guidelines of the BLM and USFWS.	A new ROP has not been added; some additional text has been added to Lease Stipulation 4 (section [b][iv]). BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.
494.	—	—	United States Fish and Wildlife Service	97942	14	Suggestion for specific change to an alternative	Throughout the DEIS there are requirements that applicants will need to monitor, assess, and evaluate the effects of development activities on the resources of the Arctic Refuge. In all of these instances, the data and analyses should be provided to the USFWS and BLM for their records. Data should be provided in electronic format and be accompanied by complete metadata and information about collection and analysis methodology.	The BLM will share data with the USFWS and other agencies/governments as appropriate.

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495.	—	—	United States Fish and Wildlife Service	97942	16	Suggestion for specific change to an alternative	[Stipulation 1] In a manner similar to the NPRA FEIS/IAP, we recommend that river setbacks be used to meet the objectives stated in Stipulation 1, which include the other Refuge purposes. Alternative D reflects the Service's recommended minimum of 0.5 mi setback for all identified rivers, while we also identified greater setbacks for larger rivers, which we believe are necessary and appropriate to protect the other purposes of the Refuge as well as Wild and Scenic River values. The recommendations are similar to setbacks used for important habitat and subsistence-use rivers and riparian areas in NPRA. Exact setback distances necessary to meet the objectives could be refined by further quantitative analyses of viewshed, soundscape and the Reasonably Foreseeable Development Scenario. Overlaying river setbacks on the viewshed study submitted by TrueNorth GIS suggests that Alternative D would minimize impacts on approximately 25% more land through NSO than the other alternatives, better protecting the species, habitats and activities identified in the Refuge purposes while allowing for oil and gas development through full access to hydrocarbons through subsurface leasing. We recommend that all rivers have minimum setbacks of 0.5 mi under Alternatives B and C to meet other Refuge purposes, except for spring-fed rivers, which should have minimum setbacks of 1 mile to protect these important, unique habitat features. We believe this change is necessary to ensure that Alternatives B and C are compatible with the purposes of the Arctic Refuge as stated in ANILCA.	The requirements vary among the alternatives to facilitate analysis of the different management options.

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496.	—	—	United States Fish and Wildlife Service	97942	17	Suggestion for specific change to an alternative	[Stipulation 1] Stipulation 1 under Alternative D protects a much broader area of important, and highly used denning habitat than the other alternatives, especially in the central portion of the Coastal Plain. We believe application of this Stipulation across alternatives B and C would be more consistent with all of the purposes of the Arctic Refuge, the MMPA and BLM's responsibility under Section 7(a)(1) of the ESA.	Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options. All operators will be subject to regulations and stipulations under the ESA and MMPA.
497.	—	—	United States Fish and Wildlife Service	97942	19	Suggestion for specific change to an alternative	[Stipulation 1] Requirement/standard(s) should be added that prohibits infrastructure within maximum perceptible visible distances (e.g. how far an individual person would be able to see from any place inside a river buffer); or above heights that an individual person (spatially) is likely to be able see. Additional analysis should be completed to determine the area extent of the infrastructure prohibitions/height limitations.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
498.	—	—	United States Fish and Wildlife Service	97942	20	Suggestion for specific change to an alternative	[Stipulation 1] We recommend that appropriate Stipulations and ROPs to minimize impacts to Wild and Scenic River characteristics (e.g., maintaining water quality, free-flowing condition, identified Outstandingly Remarkable Values (ORVs), and wild classifications) be applied whenever activities may affect a river's Wild and Scenic River characteristics.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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499.	—	—	United States Fish and Wildlife Service	97942	21	Suggestion for specific change to an alternative	[Stipulation 1] We recommend that Requirement/Standard(s) should be added across alternatives B-D that provides acoustic protections for natural quiet from within suitable river corridors.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
500.	—	—	United States Fish and Wildlife Service	97942	22	Suggestion for specific change to an alternative	[Stipulation 1] We recommend adding a Requirement/Standard(s) under Oil and Gas Field Abandonment, across alternatives B-D that specifies all eligibility findings and suitability factors as specified in the Arctic Refuge wild and scenic river review should be restored to a point where the area is again qualified for inclusion in the National Wild and Scenic River System.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
501.	—	—	United States Fish and Wildlife Service	97942	23	Suggestion for specific change to an alternative	[Stipulation 1] We recommend adding an additional Requirement/Standard(s) that reads: Before activities affecting suitable Wild and Scenic river corridors can occur, collection of baseline data that documents current suitable river characteristics will be completed as prescribed by the Authorizing Officer and in consensus with the USFWS as the surface management agency. This information will be used to monitor impacts, detect when National Wild and Scenic River System values are threatened, and identify needs for changes in practices. The lessee is to provide support for these efforts to help monitor and analyze effects on suitable river values and wild classification.	The USFWS conducted a Wild and Scenic Rivers review as part of its Revised CCP (2015) as the surface management agency. The Revised CCP describes baseline outstandingly remarkable values data used in making suitability determinations.

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502.	—	—	United States Fish and Wildlife Service	97942	24	Suggestion for specific change to an alternative	[Stipulation 1] The Requirement/Standard(s) should be designed to specifically maintain characteristics of the recreation and scenic ORVs for the Kongakut River, even though it is outside the project area. GIS modeling should be completed to determine whether/to what extent a setback within the eastern boundary of the project area would be needed to maintain viewshed characteristics of the scenic ORV for the Kongakut River.	Given the substantial distance between the river and the eastern boundary of the Coastal Plain, a protective buffer within the program area boundary is not warranted, unlike the rivers for which buffers would be established under Lease Stipulation 1.
503.	—	—	United States Fish and Wildlife Service	97942	25	Suggestion for specific change to an alternative	[Stipulation 1] Alternatives B-D prohibit permanent oil and gas facilities (gravel pads, roads, airstrips, pipelines) within certain river corridors; and on a case-by-case basis allow pipeline and road crossings deemed essential to cross through setbacks. This threatens the tentative wild classification of suitable rivers. We recommend changing requirement/standard wording for and the HulaHula river under all alternatives to include the following language: "(NSO) No permanent oil and gas facilities are allowed in the streambed and within the setback distances to protect Wild and Scenic River characteristics." Alternatives B-D seek to "minimize the disruption of free flow" but language should specify that maintaining free flow is required to meet Service interim management requirements for suitable rivers.	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Therefore, if an operator were required to access resources east of the Hulahula River, they may need a right-of-way across the river; prohibiting such access would not comply with the Tax Act.
504.	—	—	United States Fish and Wildlife Service	97942	26	Suggestion for specific change to an alternative	[Stipulation 1] Preservation of recreational hunting, fishing, hiking and boating values and opportunities is an original purpose of the Arctic Refuge, and the majority of visitors recreate within the project area. In order to meet the original purpose of this area, an objective for Alternatives B and C should be to minimize impacts on recreation.	Although recreation is not a current purpose of the Arctic Refuge under ANILCA, the lease stipulations and ROPs provide protections for multiple resources that maintain recreation values.

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505.	—	—	United States Fish and Wildlife Service	97942	27	Suggestion for specific change to an alternative	[Stipulation 1] The Canning, Marsh Fork-Canning (main tributary of the Canning), Hulahula, and Kongakut Rivers are highly valued and/or used by the public for recreation. The objective of this stipulation should include preservation of Recreational Outstandingly Remarkable Values as described for the Marsh Fork-Canning, Hulahula and Kongakut Rivers, and include requirement/standards consistent with USFWS interim management prescriptions for suitable rivers.	Although recreation is not a current purpose of the Arctic Refuge under ANILCA, the lease stipulations and ROPs provide protections for multiple resources that maintain recreation values. Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. For example, if an operator were required to access resources east of the Hulahula River, they may need a right-of-way across the river; prohibiting such access would not comply with the Tax Act.
506.	—	—	United States Fish and Wildlife Service	97942	28	Suggestion for specific change to an alternative	[Stipulation 1] We recommend deleting the last sentence in the objective "Protect the water quality, quantity....across the coastal plain", and include "springs and aufeis" in the first sentence following "riparian areas".	Text has been edited as recommended.
507.	—	—	United States Fish and Wildlife Service	97942	29	Suggestion for specific change to an alternative	[Stipulation 1] While Sadlerochit Springs appears to be within the Sadlerochit River, it is actually west of the Sadlerochit River and is a tributary to the Itkilyariak River. We recommend that Sadlerochit Springs and Creek, and Itkilyariak Creek-complex have a 3-mile setback in all alternatives in Leasing Stipulation 1 due to its cultural significance and unique terrestrial and aquatic communities. The Sadlerochit Spring Creek and Itkilyariak Creek complex have a unique endemic population of dwarf Dolly Varden and is an important subsistence use area. For more information see Arctic Refuge CCP (2015).	Current setbacks were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.

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508.	—	—	United States Fish and Wildlife Service	97942	31	Suggestion for specific change to an alternative	[Stipulation 1] To meet the objective for Stipulation 1 and meet the other identified Refuge purposes, gravel mining sites should not be allowed in areas designated No Surface Occupancy.	The language of each lease stipulation has been revised to indicate whether gravel mines are allowed. The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit.
509.	—	—	United States Fish and Wildlife Service	97942	32	Suggestion for specific change to an alternative	[Stipulation 1] We recommend the EIS provide additional clarity on how case-by-case approvals may occur and how they will be decided. Additionally, we recommend including a requirement that approvals will be reached by consensus between the BLM Administrative Officer and an authorized Service representative.	Additional text has been added to Table 2-3 in the Final EIS explaining the waiver, exemption, and modification process. Although the BLM intends to consult with the USFWS as noted in footnote 1 of Table 2-3, Section 20001(a)(2) of the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions for lands within the Coastal Plain.
510.	—	—	United States Fish and Wildlife Service	97942	33	Suggestion for specific change to an alternative	[Stipulation 2] Water resources in the Canning River Delta, including lakes, represent some of the highest quality wetland habitat within the Refuge. Unlike the coastal plain ecosystems to the west of the Refuge, the Refuge Coastal Plain has considerably fewer lakes. Therefore, lakes in the Canning River delta provide important habitat for fish and waterbirds that is not widespread in the project area. Protection of these habitats from disturbance is required to conserve fish and wildlife populations and habitats in their natural diversity and ensure water quality and quantity within the refuge is maintained. We previously recommended No Surface Occupancy be allowed in this area except for essential infrastructure approved by the BLM and with consensus from the Service. This requirement is currently supported in Alternative D, and should be applied to alternatives B and C to help maintain the other ANILCA purposes of the Refuge.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

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511.	—	—	United States Fish and Wildlife Service	97942	35	Suggestion for specific change to an alternative	[Stipulation 3] To help ensure the other purposes of the refuge are met, we recommend that the Requirement/Standard for Stipulation 3 be changed under all alternatives to: "Before exploratory or production drilling, the lessee/operator/owner would conduct studies to ensure drilling would not disrupt flow to or from, and waste injection wells will not contaminate any perennial springs. Study plans would be developed in consultation with the BLM, USFWS, and other agencies, as appropriate." Under all alternatives, the following phrase should be added after all delineated buffers referring to "above" springs: "or to a distance that sufficiently protects groundwater sources and flows of (the named spring), whichever is greater."	Text of Lease Stipulation 3 has been edited.
512.	—	—	United States Fish and Wildlife Service	97942	36	Suggestion for specific change to an alternative	[Stipulation 4] Due to the abundance, diversity and accessibility of subsistence resources in the nearshore area, this zone is a significant subsistence hunting area. Alternative D requirements to coordinate with local users represents best-practices developed for NPRA and the Chukchi Sea leasing programs and should be applied consistently when subsistence resources may be impacted.	The objective of ROP 36 provides opportunities for subsistence users to participate in planning and decision-making to prevent unreasonable conflicts between subsistence uses and other activities in all alternatives.

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513.	—	—	United States Fish and Wildlife Service	97942	37	Suggestion for specific change to an alternative	[Stipulation 4] As such, the coastline provides an important movement corridor and habitat for resting for bears during summer and autumn. Alternatives B and C do not provide temporal restrictions on activities which could lead to unnecessary conflict with polar bears. Alternative D restricts activities in this area to the time of year when polar bears are less likely to be moving along the coast, thus providing a good mechanism for reducing conflicts, and potential lethal removal of bears. We recommend that the requirements/standards from D be applied across all alternatives to ensure requirements of the MMPA and ESA are met.	The requirements vary among the alternatives to facilitate analysis of the different management options. All operators will be subject to regulations and stipulations under the ESA and MMPA.
514.	—	—	United States Fish and Wildlife Service	97942	38	Suggestion for specific change to an alternative	[Stipulation 4] We recommend altering the Objective in this stipulation to better describe the diversity of avian species. 'Waterfowl' is used, but should be 'waterbirds', and include 'sea birds and larids', since larids and seabirds are not covered by definition of 'waterbirds' on p. 3-86, or in Table J-9. Please change to "Objective: Protect fish and wildlife habitat, including that for waterbirds, larids, sea birds, and shorebirds, caribou insect relief"	See Table J-9 to distinguish between larids and seabirds.

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515.	—	—	United States Fish and Wildlife Service	97942	39	Suggestion for specific change to an alternative	[Stipulation 5] Alternatives B and C do not provide protections for the possible behavioral avoidance of important polar bear denning habitat even with a small development footprint. Alternative D allows polar bears unhindered access to large areas of their preferred denning areas in the Coastal Plain. This will become increasingly important as the density of land-based dens increases in future years due to sea ice loss. We recommend that the requirements/standards from Alternative D be applied to Alternatives B and C. This would be most consistent with the Refuge purposes as outlined in ANILCA, the ESA and the MMPA.	The requirements vary among the alternatives to facilitate analysis of the different management options. All operators will be subject to regulations and stipulations under the ESA and MMPA.
516.	—	—	United States Fish and Wildlife Service	97942	40	Suggestion for specific change to an alternative	[Stipulation 5] The language in Alternative D, Requirements/Standard subparts (a) and (b) allow the BLM Authorizing Officer to approve alternative protective measures. We recommend any such approvals be granted only in the case of consensus by the Service, given the need to ensure compliance with the ESA and MMPA.	Although the BLM intends to consult with the USFWS as noted in footnote 1 of Table 2-3 of the Final EIS, Section 20001(a)(2) of the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions for lands within the Coastal Plain. All operators will be subject to regulations and stipulations under the ESA and MMPA.
517.	—	—	United States Fish and Wildlife Service	97942	42	Suggestion for specific change to an alternative	[Stipulation 5] Changes in denning and/or disturbance should be monitored and evaluated over time. We recommend adding a requirement that a study of a minimum of 5 years be conducted to detect polar bear dens in all active lease blocks that overlap with polar bear designated critical habitat. If changes and/or disturbance are identified, then corrective measures may be applied	The BLM intends to consult and coordinate with the USFWS as noted in footnote 1 of Table 2-3. Any new information would be incorporated into a NEPA analysis, MMPA authorizations, and ESA consultations.
518.	—	—	United States Fish and Wildlife Service	97942	43	Suggestion for specific change to an alternative	[Stipulation 6] Recommend ROP be revised as: "Objective: Reduce disturbance of caribou and hindrance or alteration of caribou movements during periods when caribou are sensitive to disturbance."	Timing limitations are applied for sensitive periods under Lease Stipulations 7 and 8.

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519.	—	—	United States Fish and Wildlife Service	97942	44	Suggestion for specific change to an alternative	[Stipulation 6] Recommend that the monitoring plan required in Requirement/Standard “g.” in ROP 23 be expanded beyond vehicle use management to all potential activities that may disrupt caribou, and that allows for adaptive management to ensure ROP 23 is effective.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
520.	—	—	United States Fish and Wildlife Service	97942	45	Suggestion for specific change to an alternative	[Stipulation 7] Recommend that the “Note” in this section be reworded as: “For the purposes of this document, the Porcupine Caribou Herd (PCH) primary calving habitat area was defined as the area with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed. It is recognized that locations of important calving areas may shift over time; thus, this definition will require continued assessment and possible revision.”	Additional text has been added to Table 2-3 of the Final EIS that further describes the waivers, exceptions, and modifications for applicable lease stipulations and ROPs.
521.	—	—	United States Fish and Wildlife Service	97942	46	Suggestion for specific change to an alternative	[Stipulation 7] Recommend revision of the Objective for this stipulation to: “Reduce the possibility of disturbance of caribou or hindrance or alteration of their movements in the south-southeast portion of the Coastal Plain, which has been identified as important caribou calving habitat during many years.”	Timing limitations are applied for sensitive periods under Lease Stipulations 7 and 8.
522.	—	—	United States Fish and Wildlife Service	97942	47	Suggestion for specific change to an alternative	[Stipulation 7] Recommend that the monitoring plan required in Requirement/Standard “a.i.” be expanded beyond vehicle use management to all potential activities that may disrupt caribou, and that allows for adaptive management to ensure Lease Stipulation 7 is effective.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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523.	—	—	United States Fish and Wildlife Service	97942	48	Suggestion for specific change to an alternative	[Stipulation 8] Because of the level of activity, noise and larger footprint associated with Central Processing Facilities, we recommended that they be prohibited from the lands identified as calving and post-calving habitat in Maps 3-22 and 3-23 for the PCH and Central Arctic Herd (CAH), as described in Alternative D.	The identified PCH calving area is not available for lease under Alternative D. Therefore, construction of any oil and gas facility, including central processing facilities, would be prohibited in this area.
524.	—	—	United States Fish and Wildlife Service	97942	49	Suggestion for specific change to an alternative	[Stipulation 8] Recommend revision: "Note: For the purposes of this document, the PCH post-calving area was defined as the area with a higher-than-average density of cows during the post-calving period for more than 40 percent of the years studied. This includes and extends beyond the primary calving area. It is recognized that locations of important post-calving areas may shift over time; thus, this definition will require continued assessment and possible revision."	Additional text has been added to Table 2-3 of the Final EIS to further describe the waivers, exceptions, and modifications for applicable lease stipulations and ROPs.
525.	—	—	United States Fish and Wildlife Service	97942	50	Suggestion for specific change to an alternative	[Stipulation 8] Recommend the following revision of the Objective for this stipulation: "To protect key surface resources and subsistence resources/activities from disturbance resulting from permanent oil and gas development and associated activities in areas used by caribou during post-calving and insect-relief periods."	Text has been edited for clarity.
526.	—	—	United States Fish and Wildlife Service	97942	51	Suggestion for specific change to an alternative	[Stipulation 9] Recommend revising the Requirement Standard under Alternative B as follows: "...lessee/operator/contractor would develop and implement a Service-approved Polar Bear impact and conflict avoidance and monitoring plan."	The BLM agrees. Verbatim mitigation, monitoring, and reporting text from the Beaufort Sea ITRs has been placed in the lease stipulations to tie into the current level of oversight that is required of operators working in polar bear country. This includes operators developing and implementing a polar bear interaction plan, which outlines how to minimize disturbance to polar bears.

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527.	—	—	United States Fish and Wildlife Service	97942	56	Suggestion for specific change to an alternative	Under all alternatives, we recommend adding the requirement for development of spill response plans, which is currently only under Stipulation 4, Alternative D, Standard iv (with these edits): "Operators would be responsible for developing comprehensive spill prevention and response plans, including Oil Discharge Prevention and Contingency Plans and spill prevention, control, and countermeasure plans and maintain adequate oil spill response capability to effectively respond during periods of ice, broken ice, or open water, based on the statutes, regulations, and guidelines of the EPA, Alaska Department of Environmental Conservation (ADEC), and the Alaska Oil and Gas Conservation Commission (AOGCC), and well as Best Management Practices (BMPs), stipulations, and policy guidelines of the BLM and USFWS." Alternatively, we recommend creating a Stipulation or ROP to address this requirement, which is then required across all habitats. Any requirement for development of spill response plans should reference water quality standards for a suitable river's preliminary classification.	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

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528.	—	—	United States Fish and Wildlife Service	97942	57	Suggestion for specific change to an alternative	A concern with oil development on the North Slope has been the lack of data to assess cumulative impacts of oil and gas development (see National Research Council Report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003)). Therefore, we recommend a long-term monitoring program be developed that analyzes the effectiveness of the Lease Stipulations and ROPs. Statistically valid sampling designs with clearly defined levels of inference and change detection capabilities should be included in the design. Development of this program would help detect impacts and employ adaptive management techniques as necessary.	Exceptions, waivers, and modifications provide an effective means of applying "adaptive management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
529.	—	—	United States Fish and Wildlife Service	97942	75	Suggestion for specific change to an alternative	Page 3-146: The DEIS states, "Under ROP 10, the pre-activity surveys required to locate dens, plus the 0.5-mile and 1-mile buffers for seismic and heavy equipment operation around occupied dens of grizzly and polar bears, respectively, would help to reduce the impacts of behavioral disturbance on denning bears (as well as birth lairs of ringed seals on landfast ice along the coast) throughout the entire program area." However, Alternatives B and C do not require such surveys, just a requirement to avoid known dens. We recommend changing the ROP under Alternatives B and C to require den surveys. Without the requirement for surveys to detect dens, the requirement to avoid known dens carries greatly diminished conservation value.	The BLM has revised ROP 10 to clarify the distinction of marine mammals, and mitigation associated with each species and during separate activities and through alternatives.

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530.	—	—	United States Fish and Wildlife Service	97942	88	Suggestion for specific change to an alternative	Page 3-115, Paragraph 5: It is not clear how the definition of PCH calving area was determined to be the "concentrated calving area during >40% of years", as the most of the 1002 area is used for calving by either the PCH or CAH, and often both herds. Recommend providing additional discussion and citations as to how this was defined.	Page 3-106 of the Draft EIS included an explanation of how the PCH calving area was defined, including citations. Additional text has been added to Section 3.3.4 for clarity.
531.	—	—	United States Fish and Wildlife Service	97942	126	Suggestion for specific change to an alternative	Page 3-89, Paragraph 4, Line 7: Additional larid species encountered along the vessel route to Dutch Harbor (USFWS survey data, most in Kuletz and Labunski 2017) would include slaty-backed gull, red-legged kittiwake, Aleutian tern; (latter two are breeding birds of conservation of concern). These species should be included here. Also, it was difficult to determine the vessel route, and not clear what that route would be used for - or how much vessel traffic the project would generate (especially through the Bering Strait). This information is necessary to adequately assess the affected environment and potential impacts.	The hypothetical development scenario anticipates two vessels per year on average. The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts associated with vessel traffic cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario. Additional discussion has been added to Section 3.3.3, Birds.
532.	—	—	United States Fish and Wildlife Service	97942	170	Suggestion for specific change to an alternative	Wilderness [Wilderness] Recommend under Oil and Gas Field Abandonment, all alternatives specify that before final abandonment, all impacted areas should be reclaimed to a point where the area is again eligible for designation as Wilderness.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
533.	—	—	United States Fish and Wildlife Service	97942	237	Suggestion for specific change to an alternative	Recommend additional information about certified weed-free gravel and supplies for road corridor construction (e.g., hay bales, wattles, blankets) and pipeline construction should be recognized throughout the document where appropriate.	Additional text has been added to ROP 43 related to weed-free gravel.

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534.	—	—	United States Fish and Wildlife Service	97942	239	Suggestion for specific change to an alternative	Additionally, we recommend the EIS state how the proponent will prevent and respond to the introduction of the following types of invasive species that may be brought in on construction supplies and equipment: * invasive terrestrial invertebrates; * invasive terrestrial vertebrates (e.g., rodents); and * marine invasive species.	As noted under ROP 43, future site-specific authorizations would require an invasive species management plan.
535.	—	—	United States Fish and Wildlife Service	97942	240	Suggestion for specific change to an alternative	Page 2-36, Operating Procedure: Objective - Invasive Species Prevention: Please include the list of supplies in the requirements (not just equipment and vehicles). Please add boats, planes, and helicopters to the description of what is considered a vehicle as these are all considered vectors for introduction. We also recommend adding language related to monitoring at ports for invasive species at barges, air strips, and landing pads. Additional consideration and language specific to response to invasive species other than weeds should be considered in the EIS; the paragraph in the DEIS currently only discusses "weed control measures".	Additional text has been added to ROP 43.
536.	—	—	United States Fish and Wildlife Service	97942	267	Suggestion for specific change to an alternative	ROP 1: [ROP 1] To meet all purposes of the Refuge, the Requirement/Standard for this ROP should read: "Areas of operation would be left clean of all debris, residual soil contamination, surface water contamination, and groundwater contamination where groundwater is hydrologically connected to springs."	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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537.	—	—	United States Fish and Wildlife Service	97942	268	Suggestion for specific change to an alternative	ROP 2: [ROP 2] Recommend adjusting the wording in the Requirement /Standard as follows: [ROP 2] The plan would be submitted to the BLM Authorized Officer for approval, in consultation with federal, State, and NSB regulatory and resource agencies for approval, as appropriate. [ROP 2] b. Lessees/operators/contractors would have an approved a written procedure. [ROP 2] c. To protect the water quality standard inherent to the wild river classification, add: "i. within setbacks for all suitable rivers, no pumpable, solid, liquid, and sludge waste shall be disposed of by injection (as is the standard elsewhere). Rather, ADEC approved storage for backhaul shall be the standard method for disposal of pumpable waste products." [ROP 2] Under disposal of rotting waste (b), recommend requiring exclusionary devices (e.g., grating, mesh, fence) be installed at all incineration sites to preclude access by wildlife.	The plan is submitted to the Authorized Officer for approval. BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

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538.	—	—	United States Fish and Wildlife Service	97942	269	Suggestion for specific change to an alternative	ROP 3: [ROP 3] Recommended revision: The BLM Authorized Officer may allow storage and operations at areas closer than the stated distances if properly designed and contained to account for local hydrologic conditions. [ROP 3] Under all alternatives, recommend adding language to the Requirement/Standard that requires secondary containment and spill response equipment for all fuel equipment and caches. [ROP 3] For Alternatives B-D: To protect the water quality standard inherent to the wild river classification, recommend inserting a Requirement/Standard specific to suitable rivers: "Refueling equipment within setbacks for all suitable rivers is prohibited. Fuel storage stations would be located outside the setbacks except for small caches (up to 210 gallons) for motor boats, float planes, and ski planes, and for small equipment such as portable generators and water pumps, which would be located at least 100 feet from the active floodplain of suitable rivers."	The text has been revised. BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan. ROP 3 provides adequate protection for all waterbodies, including those suitable for wild and scenic river status.
539.	—	—	United States Fish and Wildlife Service	97942	270	Suggestion for specific change to an alternative	ROP 5: [ROP 5] The Requirements/Standard section under ROP 6 should be moved in its entirety to ROP 5 and added to the current ROP 5 Requirement/Standard.	The Requirements/Standards of ROP 6 have not been added to ROP 5.

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540.	—	—	United States Fish and Wildlife Service	97942	271	Suggestion for specific change to an alternative	ROP 6: Consistent with the mandate for habitat protection within the project area(s), environmental damage and unnecessary or undue degradation of the lands should be avoided and minimized to the greatest extent practicable, including that which may be caused by vehicular traffic. [ROP 6] Paragraphs "b." and "e.": In order to determine air impacts to the Arctic National Wildlife Refuge, we recommend adding "and Class II" after Class I areas. [ROP 6] Paragraph "g.": Ambient monitoring data can be used to determine impacts to Air Quality Related Values (AQRVs). This paragraph should include the following language: "or shows impacts above specific levels of concern for AQRVs".	Additional edits have been made to ROP 6. Class I areas receive special treatment in ROP 6 (sections b and e) because, unlike Class II areas, which constitute the rest of the U.S., they are subject to more stringent air quality standards. See ROP 6 (section f) for impacts on AQRVs.
541.	—	—	United States Fish and Wildlife Service	97942	272	Suggestion for specific change to an alternative	ROP 8: [ROP 8] This Requirement/Standard as currently worded does not meet the stated Objective or ANILCA purposes for the refuge. We recommend editing the objective to read: "In flowing waters (rivers, streams and springs) ensure water of sufficient quality and quantity to conserve fish, waterbirds, and wildlife populations and habitats in their natural diversity." [ROP 8] While the requirements should meet Alaska DNR guidelines for temporary water withdrawals, the unique presence of springs within the coastal plain warrants inclusion in the protections. Thus, we recommend the Requirement/Standard be edited to read: a. Withdrawal of unfrozen water from springs, rivers and streams during winter (onset of freeze-up to break-up) is prohibited. The removal of ice aggregate from grounded areas 4 feet deep or less may be authorized from rivers on a site-specific basis. b. Water withdrawal is prohibited year round from the following rivers, streams and springs: Canning, Hulahula, and Sadlerochit rivers	Text of the requirement/standard has been edited. With regards to comments b and c, the State of Alaska has the responsibility to authorize water withdrawals, ensuring sufficient water quality and quantity. It is the BLM's responsibility to ensure compliance with authorizations.

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541. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	including Itkilyariak Creek, a tributary of the Sadlerochit River that drains the Sadlerochit Spring, and perennial springs on the Tamayariak, Sadlerochit (the spring is located just west of the main stem in a tributary of the Sadlerochit River), Fishhole I Spring on the Hulahula River, and the perennial spring on the Okerokovik River, which is a tributary to the Jago River. c. Water withdrawal from other rivers and streams, outside of the winter, may be approved by the BLM Authorized Officer, in consensus with the USFWS, with adequate protection of hydrologic regimes, water quality and fish and wildlife habitats and populations." [ROP 8] We recommend the ROP identify who will monitor these requirements/standards and how the operator will determine the best approach to achieve required percentages and depths.	(see above)

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542.	—	—	United States Fish and Wildlife Service	97942	273	Suggestion for specific change to an alternative	ROP 9: [ROP 9] Recommend providing additional explanation in the body of the document as to how water withdrawal amounts were determined within the Requirement/Standard and whether these withdrawal amounts ensure water volumes will remain sufficient to support fish communities found within the affected water bodies. [ROP 9] We recommend adding the following requirement to this ROP as it currently does not contain requirements for determining fish presence prior to activities that could impact fish: "Sensitive and non-sensitive fish species will be assumed to be present until surveys with 95% detection probability have been conducted during the appropriate seasons." [ROP 9] We recommend adding the phrase "connectivity to adjacent bird nesting sites" under the Requirement/Standard. Additionally, we recommend changing the rest of the Requirement/Standard to read: "Withdrawal of unfrozen water from lakes and the removal of ice aggregate from grounded areas 4 feet deep or less during winter and withdrawal of water from lakes during the summer may be authorized on a site-specific basis, depending on water volume and depth, the fish community, and connectivity to other lakes or streams and adjacent bird nesting sites." [ROP 9] Under Alternative D: This ROP is applicable to all birds. Please change "Additional modeling and monitoring of lake recharge may be required to ensure natural hydrologic regime, water quality, and aquatic habitat for migratory birds" to "Additional modeling and monitoring of lake recharge may be required to ensure natural hydrologic regime, water quality, and aquatic habitat for birds."	Water withdrawal amounts are determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts. State of Alaska requirements would address impacts on fish present. Text has been added to clarify.

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543.	—	—	United States Fish and Wildlife Service	97942	274	Suggestion for specific change to an alternative	ROP 10: [ROP 10] This ROP currently states that these restrictions do not apply to the use of equipment on ice roads after they are constructed. This is inconsistent with the language below and also with standards promulgated in ITRs for polar bears. If an ice road is constructed and a polar bear den is later detected within 1 mile of it, industry will likely have to reroute the road. While it is true that ITRs will likely have requirements about detecting dens, this ROP does not provide enough detail on how dens will be detected. Without a survey, there would be no known dens, and therefore no need to modify activity. Section b under Alternative D should be included in Alternatives B and C as well, given there is a requirement that all known dens be avoided and surveys are necessary to locate dens. [ROP 10] Recommend modifying the date range in Section b to end on April 18th, as this is the upper tail of den emergence for land-based denning for bears in the Southern Beaufort Sea as calculated from data published in Rode et al. (2018) and summarized in USGS Alaska Science Center, Polar Bear Research Program (2018). The text should clarify that if an aerial infrared survey is to be conducted, it should be conducted between December 15 and January 31 of any given year. [ROP 10] Requirement/standard (a) states that use of vehicles and other equipment is prohibited within 0.5 miles of grizzly bear dens identified by ADFG, however ADFG does not currently identify grizzly bear dens in the Refuge. Revise this to state that grizzly bear dens will be identified by the Service, and if the data are not available then the lessee will work with the Service to develop or conduct	Regarding polar bears, the current language is verbatim from 2016 USFWS incidental take regulations and mitigation measures in the CFR. It aligns with what the USFWS expects of operators currently working in the polar bear's range in the Beaufort Sea. With regard to grizzly bears, the State of Alaska, the primary manager for this species, manages them. The BLM will initiate work with the State of Alaska in cooperation with the USFWS as the land manager.

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543. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	studies to model habitat use (including denning, foraging and travel) by grizzlies in and around 1002	(see above)
544.	—	—	United States Fish and Wildlife Service	97942	275	Suggestion for specific change to an alternative	ROP 11: The program area is steeper, more incised, and includes more river systems compared to flat areas in NPRA where extensive 3D-seismic surveys have been conducted. Topography strongly affects snow, hydrology and permafrost regimes of this generally hilly region and increases the potential for significant impacts to vegetation. Detailed microtopographic transects across existing 3D seismic trails show that there is compression of the tundra vegetation mat that is up to 20 cm in depth. These changes to microtopography within the track cause other changes to snow, hydrology, and thermal regimes, which make the tracks visible from the air and create conditions in some areas favorable to thermokarst and thermal erosion. Changes in the microtopography and compression of the vegetation mat also would have likely consequences to habitats of many species of plants, insects, small mammals, and birds (Walker et al. 2019). In order to minimize these effects, we suggest the following: * [ROP 11] For Alternatives B-D, change requirement/standard h. to "...overland travel will be monitored, and the operator will accommodate representative(s) during operations." * [ROP 11] In Alternatives B-D, recommend including the requirement for the operator to submit a snow monitoring plan that outlines measurement protocols (occurring before and during winter tundra travel) to be submitted to BLM and USFWS for review prior to work being conducted, to ensure habitat impacts are minimized. Protocols should include field measurements	The operators are required to accommodate representatives during operations for monitoring. It is the discretion of the agency whether they will conduct monitoring. Details of a monitoring plan will be determined when site-specific proposals are submitted. Text has been edited ROP 11 as needed.

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544. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	accounting for snow depth and density at sites on the Coastal Plain, and should represent the topographic diversity (e.g. terrain ruggedness, elevation, landforms, latitude and longitude) of the project area. Existing protocols used by the State of Alaska Department of Natural Resources (DNR) for the central Arctic, such as described in Deny et al. 2009 or newer may be useful. * [ROP 11] Under Requirement/Standard "a," all Alternatives, indicate that the exact dates are determined annually and recommend removing the approximate dates given the differences in snow depth and distribution for the Arctic Refuge Coastal Plain compared to the central Arctic and the trend towards decreasing snow cover season over time. * [ROP 11] Change Requirement/Standard "b," second sentence, under all Alternatives to read: "These vehicles would be selected and operated in a manner that eliminates direct impacts on the tundra caused by shearing, scraping, ..." * [ROP 11] Alternative D (standard a) mentions measurements should be made "over the highest tussocks". No features are mentioned in alternatives A-C leaving the question open from where measurements can originate. Suggest standardizing across alternatives (e.g., above tussock tops) and in a manner consistent with DNR measurement protocols. * [ROP 11] Recommend adding that pre-packing with appropriate low-pressure ground vehicles to achieve required depth x density requirements may be required in tussock tundra and other sensitive vegetation types.	(see above)
545.	—	—	United States Fish and Wildlife Service	97942	276	Suggestion for specific change to an alternative	ROP 15: [ROP 15] The Requirement/Standard listed here may be conflicting with ROP 1 I, standard G. We recommend reviewing these two requirements for compatibility.	ROPs 11 and 15 are compatible.

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546.	—	—	United States Fish and Wildlife Service	97942	277	Suggestion for specific change to an alternative	ROP 16: High levels of biodiversity are typically found within river corridors due the topographic gradient and associated vegetation diversity. [ROP 16] Thus, to meet the purposes of the Refuge to conserve fish and wildlife populations and habitats, as well as provide continued subsistence access to these resources and ensure water quality and quantity, we recommend that the objective be revised to "Protect water quality and quantity in rivers and streams and minimize alteration of riparian habitat." Subsequently, the requirement/standard could be revised to state "Exploratory drilling is prohibited in rivers, streams and other water bodies." No exceptions need to be allowed at this time, as it is our understanding that it is not typical industry practice to drill in rivers or other waterbodies.	Lease Stipulation 1 addresses water quality and quantity protections.

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547.	—	—	United States Fish and Wildlife Service	97942	278	Suggestion for specific change to an alternative	ROP 19: [ROP 19] Recommend changing the Requirement/Standard “a”. to read: “...unless further setbacks are stipulated under lease stipulations 1, 2, and 3.” [ROP 19] Requirement/Standard “a.” and “c.”: Alternatives B-D allow for non-permanent oil and gas facilities (gravel pads, roads, airstrips, pipelines), and on a case-by-case basis allow pipeline and road crossings deemed essential to cross through setbacks. This threatens the tentative wild classification of suitable rivers. We recommend changing the Requirement/Standard wording to: “(NSO) No permanent oil and gas facilities are allowed in the streambed and within the setback distances outlined to protect Wild and Scenic River characteristics.” [ROP 19] Recommend changing the Requirement/Standard “c.” to read, “Siting temporary winter exploration and construction camps on river sand and gravel bars is allowed and encouraged, except on suitable river setbacks.”	The tex in ROP 19t has been revised as needed. Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Therefore, applicants may need a right-of-way across rivers; prohibiting such access would not comply with the Tax Act. Placement of infrastructure on sand and gravel bars reduces impacts on vegetation and therefore is encouraged, even within suitable river setbacks.

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548.	—	—	United States Fish and Wildlife Service	97942	279	Suggestion for specific change to an alternative	ROP 21: [ROP 21] For any gravel-related work, where that gravel is brought in from off the Refuge, we recommend a condition requiring the use of Certified Weed-Free Gravel to lessen chances of introducing invasive plants. [ROP 21] Recommend editing "e." to read, "Using approved impermeable liners under gravel infrastructure to minimize the potential for hydrocarbon and other hazardous materials spills to migrate to underlying ground or adjacent water resources." [ROP 21] In order to address the topography/gradient difference of the Arctic Refuge as compared to the NPRA, we recommend adding the following: "j. Facilities and infrastructure will be designed to minimize alteration of sheetflow/overland flow."	Text has been added to ROP 43.
549.	—	—	United States Fish and Wildlife Service	97942	280	Suggestion for specific change to an alternative	ROP 22: [ROP 22] Recommend the following changes to the Requirement/Standard: * To allow for sheet flow and floodplain dynamics and to ensure passage of fish and other organisms, single span bridges are preferred * Add "d. Facilities and infrastructure will be designed to minimize alteration of sheetflow/overland flow." * Add the following to requirements: e) we recommend adequate data on stream flow, seasonal patterns in lake connectivity, and sheet flow be collected prior to planning bridges and culverts. Data will be stored in a centralized database and available to the general public.	The requirement/standard has been added to ROP 21.

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550.	—	—	United States Fish and Wildlife Service	97942	281	Suggestion for specific change to an alternative	ROP 23: These recommendations were developed for the Central Arctic Caribou Herd . Given the differences in herd and range characteristics, they may or may not be appropriate or effective at mitigating impacts to the Porcupine Caribou Herd. [ROP 23] We recommend that the monitoring plan noted in Requirement/Standard “g.” be expanded beyond vehicle use management to monitor the effectiveness of these requirements on the PCH. The plan should allow for adaptive management to ensure effectiveness. [ROP 23] We recommend approval on the adequacy of any caribou studies be granted only in the case of consensus by the Service and in consultation with the Porcupine Caribou Management Board. Additionally, we recommend that any development proposal should include studies of caribou movements before, during and after completion.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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551.	—	—	United States Fish and Wildlife Service	97942	282	Suggestion for specific change to an alternative	ROP 24: [ROP 24] For Alternatives B and C, in Requirement/Standard, suggest deleting “c. Potential use of the site for enhancing fish and wildlife habitat.” It may be that fish will eventually find gravel pit water reservoirs and use them, but it would not be in keeping with Refuge purposes to promote this. Additionally, any impoundments affecting suitable rivers would threaten the interim management responsibilities of the Service to maintain free-flowing condition. [ROP 24] Requirement/Standard “a” in Alternative D should be modified to read “...floodplains of the three rivers...” and remove the Aichilik River from the list of major fish bearing rivers because it is outside of the 1002 Area. [ROP 24] Requirement/Standard “a.”: Alternatives B-C: Recommend changing gravel mine site language to “Locate outside the active floodplain: except where further setbacks are stipulated under Lease Stipulation 1.” Alternative D: insert additional requirement: “Construction of gravel mine sites or water reservoirs may not be considered within the setbacks stipulated for suitable rivers under Lease Stipulation 1.” [ROP 24] In order to promote development of mining restoration plans (see 2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003), we recommend adding the following requirement to each alternative: “Each proposed mine site shall have a Service-approved restoration plan and effectiveness monitoring plan prior to site approval and construction.”	The USFWS CCP (2015) will be revised to reflect all purposes of the Arctic Refuge. Text has been edited. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed. The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2000-acre limit. Although the BLM intends to consult with the USFWS as noted in footnote 1 of Table 2-3 of the Final EIS, Section 20001(a)(2) of the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions for lands within the Coastal Plain.

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552.	—	—	United States Fish and Wildlife Service	97942	283	Suggestion for specific change to an alternative	ROP 25: [ROP 25] Recommend adding that the Service be involved in the development and approval of a plan to help prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes as well as assist in monitoring during on-going activities. [ROP 25] Recommend correcting the language in the Objective. Change "...populations of ground-nesting birds" to, "populations on ground-nesting birds."	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Text has been edited.

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553.	—	—	United States Fish and Wildlife Service	97942	284	Suggestion for specific change to an alternative	ROP 27: [ROP 27] The Service recommends the use of lattice towers and avoidance of guy wires which pose a significant collision risk for birds. [ROP 27] Page 2-29 ROP: Under Requirement/Standard: The Avian Power Line Interaction Committee (APLIC) produced a document in 2012 with guidance for reducing bird collisions with power lines. We recommend the Requirement/Standard include complying with the most up-to-date, suggested practices as published in the 2012 APLIC document, "Reducing Avian Collisions With Power Lines: The State Of The Art In 2012" and future updates to this guidance to minimize collisions and subsequent unauthorized take of eagles, other protected species, and birds in general. [ROP 27] Under Requirement/Standard: If exceptions are granted to the requirement/standard, wires would pose a risk to birds, but mitigation measures are available. Recommend changing the language in this section read: "If exceptions are granted allowing overhead wires, overhead wires would be clearly marked along their entire length to improve visibility to low-flying birds. Such markings would be developed through consultation with the USFWS", after items "i." through "ii	Text has been added to ROP 27 (section b). See ROP 31 for APLIC guidelines.

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554.	—	—	United States Fish and Wildlife Service	97942	285	Suggestion for specific change to an alternative	ROP 28: [ROP 28] Current plans for developing an Ecological map does not specify including information on habitat needs of priority birds and mammals to help determine beforehand which land is most likely important for these animals. Information currently available on habitat suitability should be part of the ecological mapping process. Further, more than one year of surveys may be needed to understand wildlife values, particularly for species showing large variation in numbers from year to year (e.g., opportunistic shorebirds such as pectoral sandpipers, red and red-necked phalaropes, buff-breasted sandpipers). Thus, we recommend the requirement be revised to state: "The map would be prepared in time to plan an adequate number of seasons of ground-based wildlife surveys needed to characterize habitat suitability." [ROP 28] The proposed "ecological land classification map of the area" would likely not be able to address the stated objective. We recommend the development of a database, map, and models of likelihood of use need for targeted species within the program area. [ROP 28] The requirement should include cooperation with the Service to assess the information necessary for planning of ground-based wildlife surveys.	Text has been edited in ROP 28. Additional requirements, including those associated with infrastructure in support of oil and gas development, can more realistically be added when the BLM receives an application to permit such infrastructure. The BLM intends to consult with the USFWS, as noted in footnote 1 of Table 2-3 of the Final EIS.

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555.	—	—	United States Fish and Wildlife Service	97942	286	Suggestion for specific change to an alternative	ROP 29: [ROP 29] Recommend adding to Requirement/Standard: "Cultural Outstandingly Remarkable Values as described for the Hulahula River shall be maintained." [ROP 29] Recommend including the following language, "If the Permittee discovers any historic, prehistoric, or archaeological sites or artifacts during the course of field operations, all activity at that site shall cease and the State Historic Preservation Office in conjunction with BLM and USFWS shall be contacted immediately but not more than 24 hours after the incident occurs."	Lease Stipulation 1 provides specific protections for the Hulahula River. ROPs 29, 40, and 41 provide protections for cultural and paleontological resources throughout the program area. Additional coordination requirements for compliance with Section 106 will be specified in the programmatic agreement.
556.	—	—	United States Fish and Wildlife Service	97942	287	Suggestion for specific change to an alternative	ROP 30: [ROP 30] Under Requirement/Standard: Activities associated with removal of less than 100 cubic yards of bedrock outcrops, sand or gravel from cliffs also have potential to result in raptor mortality and nest/territory abandonment (all of which are prohibited under the Bald and Golden Eagle Protection Act). To avoid unauthorized take of these protected species, project proponents must consult with the Migratory Bird Management Permit Office prior to conducting these activities. The presence of nests may not preclude the work, but an Eagle or Eagle Nest Take Permit may be required before work commences to avoid unauthorized eagle take. Please add a statement that lessee/operator/contractor will consult with the USFWS Migratory Bird Management Permit Office prior to conducting activities that disturb potential eagle habitat. [ROP 30] Please use metric units in this ROP (e.g. 200 meters rather than 656 feet). This change will ensure consistency and reduce confusion.	All future project-specific authorized activities are required to comply with the Migratory Bird Treaty Act. This ROP does not use feet.

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557.	—	—	United States Fish and Wildlife Service	97942	288	Suggestion for specific change to an alternative	ROP 33: [ROP 33] In order to monitor and assess and impacts of construction on wildlife movements, we recommend adding that the lessee may need to support studies and monitoring efforts in addition to providing information on locations of new infrastructure.	Additional monitoring or studies determined to be necessary are determined at the project-specific basis. ROP 33 does not preclude the BLM from requiring additional monitoring based on future NEPA analysis and site-specific authorizations.
558.	—	—	United States Fish and Wildlife Service	97942	289	Suggestion for specific change to an alternative	ROP 34: [ROP 34] We recommend adding a Requirement/Standard to address aircraft associated disturbance to denning polar bears, as well as polar bears active on the land during summer and autumn. Minimum altitudes for aircraft should 1,500 feet above ground level (except for takeoffs and landings). This requirement should be applied to all alternatives to ensure requirements under MMPA and ESA are met. [ROP 34] Under Requirement/Standard, Effects of low-flying aircraft on wildlife: To avoid unauthorized take (including disturbance) of eagles, aircrafts operating within 0.5 mile of any eagle nest should be prohibited below 1,500' regardless of nest substrate. As currently written, the ROP only precludes aircraft activity around nests on cliff substrates. Protected nests may be located on almost any substrate type including the ground (e.g. owls) or in trees (e.g. bald eagle). Any eagle disturbance regardless of activity type (including takeoffs and landings), is prohibited by federal law without a USFWS Eagle or Eagle Nest Take Permit.	All operators will be subject to regulations and stipulations under the ESA and MMPA. All operators are required to comply with federal laws regardless of permit requirements.
559.	—	—	United States Fish and Wildlife Service	97942	290	Suggestion for specific change to an alternative	ROP 35: The lack of adequate restoration plans and adequate bonds to cover reclamation of areas impacted by oil and gas development on the North Slope is a concern as highlighted in the 2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003). [ROP 35] Restoration standards should be set in	The BLM has included an explanation regarding restoration and reclamation for the 2,000 acres included in the narrative in Section S.2.1 of Appendix S. The condition meets the intent. See footnote 1, Table 2-3. Other ROPs address contamination (e.g., ROPs 3 and 7). See ROP 1: "areas of operation would be left clean of all debris."

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559. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	stipulations in this EIS. It should also be clearly stated what level of restoration will be required before land is no longer considered part of the infrastructure development cap. We also suggest that the EIS include a description of the process that will be used to approve restoration and ultimately remove these acres from the cap. Restoration plans should be required and reviewed prior to issuing a lease. Additional information on this issue can be found in Becker et al. 2016; Walker et al. 2019; NRC 2003; GAO 2002. [ROP 35] Under Alternatives B and C, we recommend the following change: "...would be adequately reclaimed to ensure eventual restoration of ecosystem function, productivity and value. The leaseholder would develop and implement a BLM and USFWS-approved abandonment and reclamation plan. [ROP 35] Under Alternative D, we recommend the following change: "...would be restored to ensure eventual restoration of ecosystem function, productivity and value, and meet adequate standards..." [ROP 35] Under all Alternatives, we recommend changing "...visual, hydrological, and productivity objectives..." to "visual, hydrological, contamination, and productivity objectives..." [ROP 35] Recommend adding the following requirement to this ROP and elsewhere as appropriate: "All survey flagging, stakes, wire, or other debris associated with this program should be removed from the Refuge. However, shot points may remain identified to assist the required summer cleanup crew until that project has been completed."	(see above)

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560.	—	—	United States Fish and Wildlife Service	97942	291	Suggestion for specific change to an alternative	ROP 36: [ROP 36] Recommend changing Requirement/Standard, line "d" to, "...assess and appropriate range of potential effects on resources and subsistence, including contamination of those resources, as determine	ROP 7 adequately addresses this recommendation.
561.	—	—	United States Fish and Wildlife Service	97942	292	Suggestion for specific change to an alternative	ROP 40: [ROP 40] Lease Notice I provides language regarding ESA Section 7 Consultation. We suggest an additional Lease Notice be included for MMPA, similar to the following: * Lease Notice 2: The lease area may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved actions that would contribute impacts to marine mammals. The BLM would not approve of any action that may affect marine mammals until it completes its obligations under application requirements of the MMPA.	Additional lease notice added.
562.	—	—	United States Fish and Wildlife Service	97942	293	Suggestion for specific change to an alternative	ROP 41: [ROP 41] Along with approved studies that stipulate individual vehicles, suggest adopting general stipulations similar to guidance from state of Alaska DNR about summer off-road travel including: * Operations shall be restricted to dry uplands whenever possible. * Wetland crossing shall be minimized to the extent practical. * Multiple passes over the same area shall be kept to a minimum. * All operators should be made familiar with arctic vegetation types to ensure compliance.	BLM requirements should not duplicate State of Alaska requirements and North Slope Borough authorizations.

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563.	—	—	United States Fish and Wildlife Service	97942	294	Suggestion for specific change to an alternative	ROP 42: [ROP 42] Recommend clarifying in the existing Requirement/Standard that chasing wildlife with ground vehicles or aircraft is prohibited. [ROP 42] Recommend adding a Requirement/Standard to avoid and minimize the disturbance to loafing and nesting birds to the extent practicable, unless deemed to be an invasive or invading species that may negatively impact other animals that are deemed to be a priority. [ROP 42] Recommend adding a statement under Requirement/Standard: "Disturbance to both bald and golden eagles is prohibited under the Bald and Golden Eagle Protection Act (BGEPA). Appropriate spatial buffers around nests may be required to avoid take (including disturbance) by project activities. Buffer distances are both species and activity (e.g. land clearing, vehicle operation, building construction, pile driving, aircraft operation, etc.) specific. Buffer sizes range from 330 feet to 2 miles. To avoid violations of the BGEPA, the USFWS recommends project proponents apply for a USFWS Eagle and/or Eagle Nest Take Permit prior to conducting any activity with potential to take (including disturb) eagles or their nests (occupied or unoccupied)."	Text has been clarified and added in ROP 42 as needed. Operators are required to comply with federal laws regardless of permit requirements.
564.	—	—	United States Fish and Wildlife Service	97942	295	Suggestion for specific change to an alternative	ROP 43: [ROP 43] If gravel is to be brought in from off the Refuge it will be clean of invasive species or "weed free". [ROP 43] Annual monitoring for nonnative species will likely not allow for adequate eradication and control measures to be implemented. Because most invasive plants are wind-dispersed, if anything is detected, it should be eradicated immediately, not the following year. Therefore, all appropriate NEPA documents, Refuge Pesticide Use Permits, and Certifications must be in place prior to any oil/gas activities	1) Additional text has been added to ROP 43. 2) No changes made. As noted under ROP 43, future site-specific authorizations would require an invasive species management plan. 3) See response 2, above. 4) Text has been edited. 5) See response 2, above. 6) See response 2, above.

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564. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	occurring on the Refuge, to allow an ADEC-certified chemical applicator to conduct eradication/control efforts in response to the observance and documenting of invasives during growing season. [ROP 43] Executive Order 13112 (1999) requires all federal agencies to prevent the introduction of invasive species; provide for their control; and minimize their impacts to the local economy, ecology, and human health. We recommend adding the following language under the Requirement/Standard: "In consultation with the USFWS, the operator/contractor shall develop and implement a long-term monitoring and treatment plan for invasive plant species, in conjunction with the authorized work. This plan shall be developed prior to the start of work, to allow for review and subsequent approval by the USFWS." [ROP 43] Recommend changing the Requirement/Standard to read: "...detailing the methods for cleaning equipment and vehicles, including off-site disposal of cleaning fluids or materials and detected organisms, and monitoring..." [ROP 43] Erosion waddles and similar have been identified as vectors for invasive species. Therefore, these should be certified weed-free prior to allowing their use on the Refuge. [ROP 43] There are so few invasives that have been documented north of the Brooks Range that it is imperative a project of this magnitude implement a higher standard of care when addressing the potential for the spread of invasives. Therefore, all equipment must be thoroughly washed at the point of departure to ensure invasives are not brought onto the Refuge. If being transported on trailers up the haul road, by barge or plane, all equipment	(see above)

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564. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	should be cleaned at the point of departure and not cleaned in Deadhorse, Kaktovik, etc. Additionally, an approved Invasive Plant Management and Response Plan should be in place that addresses all approved chemicals for use on the Refuge, certifications of those who will be applying those chemicals and how often those chemicals can be used.	(see above)
565.	—	—	United States Fish and Wildlife Service	97942	296	Suggestion for specific change to an alternative	[Stipulation 3] We recommend adding NSO buffers and no lease setbacks as described in Alternative D to all alternatives. Alternatives B and C may not meet the other purposes of the Refuge without this requirement, including significant impacts to fish and wildlife populations and habitats in their natural diversity, the opportunity for continued subsistence uses, and water quality and quantity. Rivers in the Arctic Refuge with perennial springs support fish during the harsh winters, and rivers without springs have no fish. All Arctic Grayling and Dolly Varden are major subsistence resources in the Arctic Refuge, and their survival depends on approximately twenty springs found within the coastal plain and adjacent foothills, thus they are truly critical habitats. Only four rivers that cross the 1002 Area support major anadromous or endemic fish populations, requiring special recognition. Subsurface flow paths to perennial springs are unknown and could potentially be disturbed by drilling or fracking activity. This universal stipulation is needed to ensure that these important and unique habitats and water resources are protected per ANILCA purposes of the Refuge, while accounting for uncertainty regarding sources and flowpaths of groundwater in the Coastal Plain.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. See Section 3.4.7. The requirements vary among the alternatives to facilitate analysis of the different management options.

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566.	Jamie	Williams	The Wilderness Society	98058	4	Suggestion for specific change to an alternative	Because BLM failed to produce such a necessary depiction, TWS prepared the attached map, which depicts the sprawling nature of a realistic development scenario under Alternative B.7 This depiction of hypothetical full-scale development on the Coastal Plain mirrors how North Slope oil development has proceeded (beginning with Prudhoe Bay and its satellite fields, then moving mostly westward to the non-contiguous fields). While the locations of each well pad and other type of oilfield infrastructure shown on the map are not exact due to limited exploration data for the Coastal Plain, and the infrastructure icons are not to scale, the map provides a depiction of the reasonable extent of foreseeable development that could occur under BLM's interpretation of the 2,000-acre limitation and consistent with No Surface Occupancy stipulations in Alternative B.8Because this type of visual has immense value for agency and other decision-makers and the public to understand the possible scale of development and impacts, and is wholly feasible to produce at this stage, BLM should prepare comparable depictions for all alternatives in a revised DEIS	At the leasing stage, it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.

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567.	Brook	Brisson	Trustees for Alaska	98269	95	Suggestion for specific change to an alternative	BLM also needs to modify ROP 35. ROP 35's objective is to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use."500 To effectuate this, bonding requirements consistent with the discussion above must be added to ROP 35. BLM should estimate actual, likely reclamation costs of reasonably foreseeable development projects and consider alternatives that impose corresponding bonding amounts. Additionally, BLM should require that bonds be adjusted for inflation at regular intervals to ensure that they remain sufficient to cover any necessary reclamation activities after operations eventually conclude.	The BLM believes that the objective is appropriate. Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).
568.	Brook	Brisson	Trustees for Alaska	98270	2	Suggestion for specific change to an alternative	The DEIS states that "[u]nder ROP 10, the pre-activity surveys required to locate dens, plus the 0.5-mile and 1-mile buffers for seismic and heavy equipment operation around occupied dens of grizzly and polar bears, respectively, would help to reduce the impacts of behavioral disturbance on denning bears (as well as birth lairs of ringed seals on landfast ice along the coast) throughout the entire program area."1588 But as noted above, the DEIS mentioned a 2.5-3.7 mile zone where noise impacts to seals can be expected, and the referenced buffers apply only to bear dens, not seal lairs. The DEIS thus overstates the protection provided to seals under ROP 10. 0.5-mile and 1-mile buffers are simply insufficient.	Buffers are a proactive approach to minimize behavioral disturbance of multiple species.

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569.	Brook	Brisson	Trustees for Alaska	98270	3	Suggestion for specific change to an alternative	Finally, operations after May 1 would employ a full-time trained protected species observer (PSO) on vibroseis vehicles to ensure all basking seals are avoided by vehicles by at least 500 feet and would ensure that all equipment with airborne noise levels above 100 dB re 20 ?Pa were operating at distances from observed seals that allowed for the attenuation of noise to levels below 100 dB. The rationale behind these metrics is again not provided in the DEIS, and they do not appear to reflect the best available information. Seals are departing lairs earlier in the season, so basking seals can be expected before May 1 and this standard should be modified accordingly.1589 As detailed above, many sources of noise cause behavioral responses in seals from distances greater than 500 feet, so keeping that distance will not be effective in avoiding those responses. And while it may be a worthy goal, the effort to keep attenuated noise levels below 100 dB for observed seals would seem difficult to achieve as a practical matter. BLM should explain how this can be achieved, and/or include this in the required sound source verification test, so that distances that specified equipment must be kept from basking seals can be understood prior to undertaking the activity. 1589 Kelly 2006 (p. 48, Table 15); see also Von Duyke et al., Ringed seal spatial use, dives, and haul-out behavior in the Beaufort, Chukchi and Bering Seas (2011-2016) (using satellite transmitters to demonstrate haul-out behavior well in advance of May 1).	The 100 db level is the NMFS-approved standard for airborne noise levels. Operators will use approved methods and technologies for sound source verification in order to comply with the ESA and MMPA.

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570.	Brook	Brisson	Trustees for Alaska	98270	48	Suggestion for specific change to an alternative	Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification.1667 Additionally, areas outside of the most commonly used concentrated calving areas are still very important for caribou for post-calving needs as well as calving during particular years. BLM needs to protect both key calving and post-calving habitat, as well as protect migration corridors and movements. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates.1668	Page 3-106 of the Draft EIS has an explanation of how the PCH calving area was defined, including citations. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written

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570. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
571.	Brook	Brisson	Trustees for Alaska	98270	49	Suggestion for specific change to an alternative	Moreover, BLM's mitigation measures which are specifically targeted to address impacts to subsistence users fall far short of avoiding and minimizing impacts to affected communities. ROP 36, "Subsistence Consultation for Permitted Activities" completely ignores the need to provide opportunities for Gwich'in communities to participate in planning and decision-making to prevent unreasonable conflicts between subsistence uses and other activities. Similarly, ROP 39 requires that "Before starting exploration or development, lessees/operators/contractors are required to develop a subsistence access plan, in coordination with the Native Village of Kaktovik and the City of Kaktovik..." It is unacceptable for BLM to arbitrarily limit these coordination and consultation opportunities to Kaktovik and the North Slope Borough, in light of the abundant evidence that Gwich'in subsistence users will be significantly impacted from oil and gas leasing on the Coastal Plain.	The Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36 (section a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-3 in the Final EIS requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.

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572.	Brook	Brisson	Trustees for Alaska	98270	50	Suggestion for specific change to an alternative	We further note that ROP 36 contains no clear mechanism for actually reducing impacts to subsistence activities. There is no provision that allows a local community to prevent any oil and gas activity from moving forward if there would be significant impacts on subsistence use - rather, the community would merely be informed ahead of time. Without providing for any type of "veto" power to local communities, such measures are essentially meaningless. Moreover, subsection (c) requires that applicants prepare a plan to describe how they will avoid subsistence impacts, and submit that plan to the BLM Authorized Officer. For such a plan to have any value whatsoever, it must be shared with all potentially affected communities to determine whether the plan would effectively avoid unreasonable conflicts with subsistence. The BLM Authorized Officer should not be given carte blanche to make such determinations. Finally, we note that several of the "requirements" of this ROP merely parrot existing legal mandates and should not be considered mitigation measures for purposes of this section. This includes the requirement for BLM to do government-to-government consultation in subsection (b) and the requirement for barge operators to avoid unmitigable adverse impacts, as determined by NMFS, on the availability of marine mammals to subsistence hunters in subsection (c)(vi).1669	ROP 36 (section a) identifies mechanisms to maximize users' opportunities to participate in the planning process in order to minimize impacts on subsistence uses (e.g., conflict avoidance agreements and additional mitigation measures). ROP 36 is specific to on-lease users. The public will be able to provide input to the Authorized Officer through future site-specific NEPA processes associated with oil and gas projects. 43 CFR 3590.2 identifies the responsibility of the Authorized Officer. BLM Authorized Officers receive their authorities through the delegation process within the agency.

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573.	Brook	Brisson	Trustees for Alaska	98270	132	Suggestion for specific change to an alternative	Particularly egregious, in Lease Stipulation I, under all alternatives, allows for "[o]n a case-by case basis, essential pipeline and road crossings to the main channel would be permitted through setback areas. The setbacks may not be practical in river deltas. In these situations, permanent facilities would be designed to withstand a 200-year flood" for the Hulahula, Canning, Okpilak and Jago Rivers. ¹⁸⁵¹ Allowing development of pipelines and roads across any of these rivers is inconsistent with protecting any ORV and are exactly the type of inappropriate development for a "Wild" river, which should be maintained "free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted." ¹⁸⁵²	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the coastal plain for the exploration, development, production, or transportation necessary to carry out this section. For example, if an operator were required to access resources east of the Hulahula River, they made need a right-of-way across the river; prohibiting such access would not comply with the Tax Act.
574.	Brook	Brisson	Trustees for Alaska	98270	133	Suggestion for specific change to an alternative	Required Operating Procedure 35, is meant to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use" and describes leaseholder requirements for abandonment of "[o]il and gas infrastructure, including gravel pads, roads, airstrips, wells and production facilities." ¹⁸⁵³ Alternative D would require the leaseholder to "develop and implement a BLM-approved abandonment and reclamation plan . . . describ[ing] . . . wild and scenic river . . . eligibility and suitability" before final abandonment. ¹⁸⁵⁴ Merely describing for the eligibility and suitability for inclusion in the Wild and Scenic River system is not substantive enough to ensure protections as required by the act. BLM's] EIS currently fails to require maintenance of Wild and Scenic rivers free flowing state and ORVs. For Alternatives B and C, leaseholders would only have to "develop and implement a BLM-approved abandonment and	Under all alternatives, the BLM would maintain free-flowing characteristics of eligible river segments and ensure that authorized uses comply with all stated objectives. Management actions that prohibit surface-disturbing activities, including NSO, CSU, and TLs near the eligible and suitable WSRs (see Table 3-32 in the Draft EIS), would provide varying protections for ORVs. This would also ensure that the free-flowing condition of the river remains intact.

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574. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	reclamation plan describ[ing] short-term stability, visual, hydrological, and productivity objectives and steps to be taken to ensure eventual ecosystem restoration to the land's previous hydrological, vegetation, and habitat condition."1855 In addition, under Alternatives B and C, the reclamation must only "ensure eventual restoration," where "eventual" is not defined, so it is unclear exactly how extended a time this could be. Finally, in addition to Alternatives B and C already vague and pliable parameters these alternatives allow "[t]he BLM Authorized Officer [to] grant exceptions to satisfy stated environmental or public purposes."1856 By completely failing to account for wild and scenic river values in alternatives B and C, Required Operating Procedure 35 does not protect for any ORVs or the free flowing state of rivers. For only requiring "shortterm stability," "eventual restoration," and the availability of discretionary exceptions, extended or inadequate reclamation will negatively impact rivers' classification and potential eligibility for the Wild and Scenic Rivers system.	(see above)

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575.	Brook	Brisson	Trustees for Alaska	98270	171	Suggestion for specific change to an alternative	Lease stipulations 4 (Alt. D) and 9 (Alts. C and D) require that, before engaging in open water activities, the lessee/operator/contractor must consult with the Alaska Eskimo Whaling Commission, the North Slope Borough, and local whaling captains' associations to minimize adverse impacts on subsistence activities. ¹⁹⁵¹ Similarly, ROP 36 requires permittees who propose transporting materials to the Coastal Plain in support of oil and gas activities to engage in advance consultation with the entities listed above in order to minimize subsistence impacts. ¹⁹⁵² We believe advance consultation as a means to prevent conflicts and adverse impacts is a beneficial approach. ¹⁹⁵³ We urge BLM to expand these requirements to all action alternatives and to clarify that bulk fuel and hazardous substances are among the materials for which marine transport requires advance consultation. We further urge BLM to require the lessee/operator/contractor to engage in prior consultation with the U.S. Coast Guard before engaging in shipping activities.	Text of Lease Stipulation 4 has been modified. Operators are required to follow all federal, state, and local requirements related to fuel and hazardous substance transport. Transport of hazardous materials is coordinated and regulated by ADEC and the NSB.
576.	Brook	Brisson	Trustees for Alaska	98270	173	Suggestion for specific change to an alternative	ROP 10 prohibits oil and gas activity within one mile of known or observed polar bear dens, subject to limited exceptions. ¹⁹⁵⁴ We note that this ROP is only effective to the extent polar bear dens are accurately detected, and detection techniques have many shortcomings that BLM failed to consider. We further note that this ROP appears limited in scope to onshore oil and gas operations. We urge BLM to expand its applicability to encompass shipping activities as well and to include language clarifying that it prohibits icebreaking and other shipping activities within a one-mile radius of any polar bear den, including those on land and on sea ice.	Operators will follow USFWS guidelines for detecting and operating around known polar bear dens. Operators will also be subject to regulations and stipulations under the ESA and MMPA. Additional requirements will be determined at the site-specific level.

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577.	Brook	Brisson	Trustees for Alaska	98270	174	Suggestion for specific change to an alternative	[comment:98270-174; 190.0402]Seasonal Restriction. ROP 46 includes a seasonal restriction designed to minimize impacts on marine mammals from vessel traffic. Vessel traffic associated with Coastal Plain oil and gas operations is generally prohibited before July 1.1955 We support the idea of a seasonal restriction not only because it helps minimize conflicts with marine mammals, but also because it reduces the risks of oil and hazardous substance spills occurring due to poor weather, visibility, and ice conditions and because such spills would be extraordinarily difficult to clean up in such conditions.1956 Moreover, avoiding seasonal periods when ice is present reduces or eliminates the need to utilize noisy and disruptive icebreaking measures that are harmful to wildlife. We urge BLM to strengthen this measure by adding an October 1 fall termination date for vessel traffic.1957 The same rationale supporting the early-season restriction would counsel in favor of this change. Precluding late-season shipping would likewise help minimize wildlife conflicts and ensure that shipping is not taking place during poor weather, visibility, and ice conditions that increase the need for icebreaking, increase the likelihood of oil and hazardous substance spills, and increase the difficulty of cleaning up any such spill. We also urge BLM to strengthen ROP 46 by requiring consultation with the U.S. Coast Guard before any waiver of the July 1 or October 1 seasonal restrictions is granted, in addition to consultation with NMFS and/or USFWS. While the resource agencies have expertise concerning marine mammals, the Coast Guard is the expert agency with respect to navigation safety and the avoidance of	A hard termination date for vessel traffic is unreasonable and is not based on environmental conditions. Consultation with the NMFS and USFWS, as the primary regulatory agencies for marine mammals, will occur in accordance with ROP 46(c), as the objective is to minimize impacts on marine mammals.

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577. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	collisions, groundings, and oil and hazardous substance spills, all of which can harm marine mammals and other wildlife.[comment end]	(see above)
578.	Brook	Brisson	Trustees for Alaska	98270	178	Suggestion for specific change to an alternative	The analysis in the DEIS concludes that shipping impacts on marine mammals will be minimal because barges will generally be traveling slowly, such as at speeds of 10 knots or less.1958 The 10-knot speed restriction in ROP 46, however, only applies in North Pacific right whale critical habitat.1959 Additionally, recommended 5-and 9-knot speed limits are among the "reasonable precautions" that could be taken "as appropriate" when whales are observed nearby.1960 These geographically limited and non-binding speed limits are inadequate. As BLM has observed, the "speed of ships is related directly to the severity of collisions between vessels and whales."1961 Moreover, ship speed is a key factor affecting the risk of collisions, groundings, and oil and hazardous substance spills.1962 We urge BLM to expand the applicability of the 10-knot speed limit in ROP 46 to all barges, tankers, and other operational and support vessels associated with Coastal Plain oil and gas operations transiting the 5 nm buffer zone offshore of the program area and its vicinity.1968 Doing so would be consistent with the U.S. Bureau of Ocean Energy Management's (BOEM's) recent decision concerning the Liberty offshore drilling and production facility, which provided that "[v]essels traveling between West Dock/Endicott and Foggy Island Bay will not exceed speeds of 10 knots in order to reduce the potential for whale strikes."1969 We note that, while a 10-knot speed limit substantially reduces the number of whale strikes and their severity, it	The 10-knot speed is a reasonable standard and would align with other restrictions across the North Slope. Additional restrictions will be analyzed on a project-specific basis.

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578. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	does not entirely eliminate the risk of collision. Slower speeds are appropriate under certain circumstances, including when ships approach within 300 yards of observed whales and when visibility is limited. ROP 46 reflects this by recommending 5-and 9knot speed limits, respectively, in such situations. We urge BLM to make these 5-and 9-knot speed limits mandatory rather than merely listing them among the "reasonable precautions" that an operator "would take" to avoid whale interactions.	(see above)
579.	Brook	Brisson	Trustees for Alaska	98270	180	Suggestion for specific change to an alternative	Additionally, ROP 46 calls upon vessel operators to undertake a variety of measures when approaching within 1 mile of observed whales, including reducing the vessel speed to less than 5 knots when the vessel is within 300 yards of a whale. We urge BLM to strengthen this provision by requiring vessel speed to be reduced to 10 knots as soon as the vessel approaches within 1 mile of observed whales, and then vessels would further reduce speed to 5 knots when coming within 300 yards of a whale pursuant to the existing provision. With respect to this provision and all other provisions in ROP 46, the language must be revised to clarify that the procedures impose mandatory obligations. For instance, "would" and "should" must be replaced with "must" or "shall."	The 10-knot speed is a reasonable standard and would align with other restrictions across the North Slope. Additional restrictions will be analyzed on a project-specific basis.

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580.	Brook	Brisson	Trustees for Alaska	98270	181	Suggestion for specific change to an alternative	At present, lease stipulations 4 and 9 are limited to nearshore and coastal activities, and ROP 10 is only applicable to onshore oil and gas operations. The geographic scope of ROPs 36 and 46 is less clear but, given the DEIS's general emphasis on program area impacts, they could be construed as limited to oil and gas operations within or in the immediate vicinity of the program area. Shipping-related adverse impacts, however, have the potential to occur anywhere along the marine barge route as well. Accordingly, we urge BLM to revise lease stipulations 4 and 9 and ROPs 10, 36, and 46 to make it clear that these provisions are applicable to all shipping activities associated with Coastal Plain oil and gas operations wherever they may occur.	The BLM does not have authority to regulate marine traffic outside the Coastal Plain. Where marine vessel traffic would go is beyond the scope of the analysis for this Leasing EIS. Direct and indirect impacts are analyzed for the program area generally based off the hypothetical development scenario.
581.	Brook	Brisson	Trustees for Alaska	98270	247	Suggestion for specific change to an alternative	BLM's reliance on the DEIS's mitigation measures is misplaced. For instance, Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements. ²¹⁴⁹ However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what is meant by "major construction activity" and also noteworthy that even that protection is subject to waiver.)	The BLM has the ability to manage using adaptive management principals by modifying requirements of ROPs through the waiver, exception, or modification process as needed. According to IM 2008-032 Attachment 1, page 5, the BLM or operators can initiate adaptive management modifications. Sharing of management monitoring data (if appropriate) would be initiated by the relevant wildlife management authorities and is outside the scope of this EIS. Federal, state, and local wildlife management agencies would evaluate data provided under ROP 33 to assess wildlife movements. Major construction activity has been defined in the glossary.
582.	Brook	Brisson	Trustees for Alaska	98270	248	Suggestion for specific change to an alternative	Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification. ²¹⁵⁰ Additionally, areas	Page 3-106 of the Draft EIS has an explanation of how the PCH calving area was defined, including citations. Operators are required to submit a written request for an exception, waiver, or modification

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582. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	outside of the most commonly used concentrated calving areas are still very important for caribou for post-calving needs as well as calving during particular years. BLM needs to protect both key calving and post-calving habitat, as well as protect migration corridors and movements. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population.	and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

S.3.4 ANILCA

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Douglas	Fruge	—	30574	11	ANILCA (Alaska National Interest Lands Conservation Act)	I note that the Arctic Refuge's legislative purpose "v" may be in direct conflict with purposes "i" and "iv" (see Page 1 above) if impacts from an oil and gas development program affect the conservation of "... fish and wildlife populations and habitats in their natural diversity" or "... continued subsistence uses by local residents."	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge. The USFWS will be revising its CCP to address the five purposes of the Arctic Refuge and its management strategies.
2.	Tim	Mayer	—	56678	1	ANILCA (Alaska National Interest Lands Conservation Act)	[comment:56678-1; 191]The Alaska National Interest Lands Conservation Act states that the refuge purposes are to conserve fish and wildlife populations and habitats in their natural diversity and to ensure water quality and necessary water quantity within the refuge. These purposes should be at the forefront of the analysis in the DEIS. As stated in the DEIS, "the oil and gas leasing program must also consider the Arctic Refuge purposes set out in Section 303(B)(2) of ANILCA, as amended, and modified by Section 20001 of Public Law (PL) 115-97 (Dec. 22, 2017) (PL 115-97)." (ES-1)[comment end]	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Charlotte	Basham	—	58396	3	ANILCA (Alaska National Interest Lands Conservation Act)	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA (Alaska National Interest Lands Conservation Act) which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, they then find that Gwich'in subsistence use will not be affected.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
4.	Withheld	Withheld	—	59376	14	ANILCA (Alaska National Interest Lands Conservation Act)	The Tax Act merely states that Section 1003 of ANILCA shall not apply (the prohibition against development was lifted). The other sections of ANILCA are still valid. ANILCA Section 1002 has a list of requirements before any informed decision is made. Congress did not exempt BLM from other legal compliance or direct BLM to violate any law in implementing the Tax Act direction. Did BLM fulfill ANILCA's other requirements (e.g., studies) prior to issuing the Draft EIS?	The Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement, U.S. Department of the Interior, April 1987, was a culmination of the 5 years of baseline studies as directed by Section 1002 of ANILCA.
5.	Withheld	Withheld	—	62945	1	ANILCA (Alaska National Interest Lands Conservation Act)	The BLM failed to consider how oil and gas development will interfere with the U.S. Fish and Wildlife Service's administration of the Coastal Plain. It fails to guarantee that the wilderness, conservation, and subsistence food resources for which the Arctic Refuge was first set aside in 1960 will continue to be protected.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Peter	Stern	—	69296	7	ANILCA (Alaska National Interest Lands Conservation Act)	ES-5 excluding Arctic Village, Venetie and the Native Village of Venetie Tribal Govt from 810 requirements of ANILCA is wrong as they heavily depend on the Porcupine Caribou Herd (PCH) for their subsistence.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
7.	Peter	Stern	—	69296	9	ANILCA (Alaska National Interest Lands Conservation Act)	I-6 section 1.10 Kaktovik is the only village to have an ANILCA section 810 hearing scheduled even though Arctic Village and Venetie subsistence depend on the PCH. This is wrong. 810 hearings should be held in these villages.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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8.	Peter	Stern	—	69296	75	ANILCA (Alaska National Interest Lands Conservation Act)	Page E-19 E.3 810 hearings. Native Village of Venetie Tribal Gov't should be involved in 810 hearings by having them in their communities.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
9.	Peter	Stern	—	69296	76	ANILCA (Alaska National Interest Lands Conservation Act)	Page E-20 E.4 subsistence determination. This needs to be expanded to include arctic village and venetie in any final 810 determinations.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.Draft EIS

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10.	Linda	Serret	—	69357	7	ANILCA (Alaska National Interest Lands Conservation Act)	The Tax Act merely states that Section 1003 of ANILCA shall not apply (the prohibition against development was lifted). The other sections of ANILCA are still valid. ANILCA Section 1002 has a list of requirements before any informed decision is made. Congress did not exempt BLM from other legal compliance or direct BLM to violate any law in implementing the Tax Act direction. Did BLM fulfill ANILCA's other requirements (e.g., studies) prior to issuing the Draft EIS?	The Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement, U.S. Department of the Interior, April 1987, was a culmination of the 5 years of baseline studies as directed by Section 1002 of ANILCA.
11.	Becky	Long	—	69710	21	ANILCA (Alaska National Interest Lands Conservation Act)	It is inaccurate to conclude that there is no impact on caribou subsistence resources of the Gwich'in and Inupiaq peoples in Alaska and Canada. There needs to be an 810 hearing under ANILCA because a significant portion of their subsistence comes from the Porcupine and Central herds.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
12.	Rosa	Brown	Vuntut Gwitchin Government	74326	21	ANILCA (Alaska National Interest Lands Conservation Act)	In fact, while the Bureau of Land Management determined the analysis area for direct, indirect and cumulative impacts to subsistence use is, "all areas used by the 22 Alaska caribou study communities and seven Canadian user groups subsistence study communities" it did not consider the Vuntut Gwitchin First Nation under the ANILCA Sec. 810 (subsistence impacts). The preliminary evaluation only addressed US communities, and did not explain why Canadian communities were not assessed.	Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.

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13.	Lindsay	Carron	—	74330	1	ANILCA (Alaska National Interest Lands Conservation Act)	Impact on this herd is imminent, and the surrounding tribes have a right to food security, yet they do not qualify for an 810 hearing under ANILCA which is required if a project will substantially affect subsistence. This is a human rights violation. Instead, both the Gwich'in and Inupiaq people should be allowed this hearing	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
14.	Renae	Smith	Counsel for Environmental Protection	74336	38	ANILCA (Alaska National Interest Lands Conservation Act)	BLM should conduct such bird surveys and obtain better information on abundance, distribution, habitat use, and phenology of breeding and non-breeding birds in the Coastal Plain before conducting a lease sale and hold the initial lease sale at the end of 2021 and the second lease sale at the end of 2024 as allowed by the Tax Cuts and Jobs Act. ²¹⁵ Collection of this data is not only required by NEPA, but it is consistent with ANILCA's requirement for an 18-month baseline study of the Coastal Plain region to, among other things "assess the size, range, and distribution of the populations of the fish and wildlife," and thus guide any potential exploratory activities in the area. ²¹⁶ This baseline data will also be essential for ensuring the Leasing Program's compliance with the MBTA. ²¹⁷	The Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement, U.S. Department of the Interior, April 1987, was a culmination of the 5 years of baseline studies as directed by Section 1002 of ANILCA.

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15.	Jeannie	Ambrose	—	75238	2	ANILCA (Alaska National Interest Lands Conservation Act)	Claims that the impacts of O&G on the subsistence uses and needs of resources (caribou) were insignificant unfairly disqualified the Gwich'in for a Title VIII, Section 810 hearing as mandated under Public Law 96---487, the Alaska National Interest Lands Conservation Act.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
16.	Andrew	Ogden	—	75704	5	ANILCA (Alaska National Interest Lands Conservation Act)	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA. which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, they then find that Gwich'in subsistence use will not be affected. This ignores the traditional knowledge and human rights of the Gwich'in.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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17.	Marna	Sanford	Tanana Chiefs Conference	79886	1	ANILCA (Alaska National Interest Lands Conservation Act)	The DEIS contains an analysis under Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) that ignores impacts to the Gwich'in subsistence way of life and finds that there will be no significant impacts. Such findings are not supportable based on the traditional knowledge of the Tribes and long history of reliance on the Porcupine Caribou Herd. Oil and gas exploration and development in the heart of the calving and post-calving grounds of the Porcupine Caribou Herd is a direct threat to indigenous culture and the ability to continue the subsistence way of life - and yet BLM has wholly ignored these concerns.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
18.	Withheld	Withheld	—	80930	1	ANILCA (Alaska National Interest Lands Conservation Act)	Despite acknowledging that oil and gas can have impacts on caribou, the BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA (Alaska National Interest Lands Conservation Act), which is required for development that will substantially affect subsistence. Despite the fact that a significant proportion of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds will be affected by leasing, the agency concluded that Gwich'in subsistence use will not be affected. This finding negates the traditional knowledge and human rights of the Gwich'in.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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19.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	14	ANILCA (Alaska National Interest Lands Conservation Act)	TH interprets the omission of a minimum alternative as a demonstration of the lack of commitment by the United States government toward fulfilling the other purposes set forth for ANWR (ANILCA Sec. 303(B)(2)), including conservation of fish and wildlife populations and habitats, and fulfilling international treaty obligations with regard to fish and wildlife and their habitats.	Alternative D2 has been modified to offer the minimum of only 800,000 acres of land available for lease. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge.
20.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	8	ANILCA (Alaska National Interest Lands Conservation Act)	The BLM's preliminary evaluation under the Alaska National Interest Lands Conservation Act (ANILCA) Section 810 is another example of the flawed analysis found throughout the DEIS. The Tribes have repeatedly raised with the BLM the importance of caribou, particularly the Porcupine Caribou Herd, to the Tribes and their members. Caribou form the backbone of Gwich'in life and culture, providing for the physical, cultural, and spiritual health, well-being, economic security, and food security of the Tribes' members. Perplexingly, the BLM's ANILCA Section 810 evaluation finds that there will be no significant restriction on subsistence uses for the communities of Arctic Village and Venetie. These findings are inconsistent with the information that the Tribes have provided to the BLM and the agency's own statements in other sections of the DEIS. ²⁶ These findings are also premised on BLM's flawed interpretation of subsistence access.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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21.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	9	ANILCA (Alaska National Interest Lands Conservation Act)	The BLM's ANILCA Section 810 analysis focuses on how development would restrict access to the places where subsistence activities occur, rather than analyzing how development would restrict access to the subsistence resources themselves. This approach is significantly flawed, as it arbitrarily excludes from the analysis communities such as Arctic Village and Venetie, whose subsistence use areas lie outside the Program Area, but who harvest migratory species that rely on the Program Area. Impacts from development within the Program Area to the Porcupine Caribou Herd and other migratory substance resources will necessarily restrict Arctic Village and Venetie subsistence users' access to those resources. Access to subsistence use areas is meaningless if there are no subsistence resources to harvest. The BLM's egregious findings in its ANILCA Section 810 evaluation are insupportable even under its flawed construction of access because-as the BLM acknowledges-it lacks adequate harvest data from Arctic Village. ²⁷	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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22.	Withheld	Withheld	—	82848	9	ANILCA (Alaska National Interest Lands Conservation Act)	Additionally, I am concerned that the current process does not include an ANILCA 810 hearing on subsistence use for the Gwich'in people who rely upon the porcupine caribou herd for subsistence use, even though the draft EIS acknowledges that the leasing activities could have a detrimental effect on the caribou population. These are two instances (among many) that suggest the rush to enact leasing activities on the coastal plain are leading permitting entities to fail to live up to its requirement to involve the public sufficiently in EIS processes.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
23.	Ruth	Wood	—	83199	1	ANILCA (Alaska National Interest Lands Conservation Act)	[comment:83199-1; 191]The Draft EIS does include a No Drill Alternative, but then states that the Draft EIS will ignore it because it conflicts with the Tax Bill that requires leasing. That is a false conclusion, and led to BLM ignoring its duty to adequately analyze the No Drill Alternative. The Refuge was created by specific legislation to preserve and protect fish and wildlife and habitat, wilderness, and recreational values. From the Draft EIS summary, "The oil and gas leasing program must also consider the Arctic Refuge purposes set out in Section 303(B)(2) of ANILCA, as amended, and modified by Section 20001 of Public Law (PL) 115-97 (Dec. 22, 2017) (PL 115-97)." Public Law 115-97 does not subordinate the original purposes to the one added, and according to the U.S. Fish and Wildlife Service, "The ANILCA purposes are:(i) to conserve fish and wildlife populations and habitats in their natural diversity; (ii) to fulfill the international fish and wildlife treaty obligations of the United States; (iii) to	The No Action Alternative is fully analyzed in the EIS as Alternative A, as a baseline requirement of NEPA. Section 20001 of the Tax Act precludes selection of Alternative A in a Record of Decision. The regulations require the analysis of the No Action Alternative even if the agency is under a legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency, which must be analyzed (Section 1502.14(c); CEQ's Forty Most Asked Questions Concerning CEQ's NEPA [Question #3]). All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge. Alternative D2 has been modified to offer the minimum of only 800,000 acres of land available for lease. PL 115-97 requires at least two lease sales within 7 years,

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	provide the opportunity for continued subsistence uses by local residents; and (iv) to ensure water quality and necessary water quantity within the refuge."Therefore, the Draft EIS must look at all the purposes of the Refuge, not just the newly inserted purpose to lease for oil & gas development. That means BLM must consider whether the No Drill Alternative is the best alternative for any of the purposes, and state for which purposes the No Drill Alternative would be the best. There is no question that the No Drill Alternative is the best alternative for subsistence users, for the Porcupine caribou herd, for the polar bear. The Draft EIS ignores every thing except the Tax Bill, and that is not the proper way to do a Draft EIS. The Draft EIS must acknowledge that going forward with these leases will make it impossible to fulfill the obligations required for the other purposes of the Refuge. Then, they must make a decision, and that decision must be based on evidence, that is even legal to take an action that makes it impossible to continue to fulfill the purposes of the Arctic National Wildlife Refuge as established in previously existing law (Arctic Refuge purposes set out in Section 303(B)(2) of ANILCA). The amendments and modifications of Section 20001 of Public Law (PL) 115-97 (Dec. 22, 2017) (PL 115-97) do not subordinate the original purposes to the purpose of drilling. There is a contradiction in terms, and I believe itComment #1 on Draft Coastal Plain Oil and Gas Leasing Program EIS Page 2 of 3 From Ruth D. Wood, Talkeetna, Alaska 99676March 8, 2019will take an additional act of congress to change it before a ROD on this Draft EIS can be signed and before any leasing can go forward.2.	but does not limit the number of sales.

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23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	OtherAlternatives The other alternatives all offer more than the 400,000 acres in each of 2 lease sales required by the Tax Bill. BLM did not look at any minimal alternative. Given the amount of opposition to any lease sales, BLM must include two minimal alternatives of 400,000 acres each, but currently it does not.[comment:83199-2; 190.0402]A bigger problem is that this Draft EIS should cover only one lease sale. Public Law 115-97 calls for one lease sale in 4 years and another in 7 years. If a lease sale is allowed to proceed, and I assert that it should not, then things learned from the first lease sale should be used to draft an EIS for the second. Developments under the first lease sale will most assuredly impact the Refuge, and an additional EIS will be needed to address the cumulative impacts. Under no circumstances should both lease sales proceed at the same time, and Congress clearly did not intend for them to be simultaneous:"(I) the initial lease sale under the oil and gas program under this section not later than 4 years after the date of enactment of this Act;and(II) a second lease sale under the oil and gas program under this section not later than 7 years after the date of enactment of this Act."The Draft EIS says, "This Draft EIS is intended to fulfill NEPA requirements for lease sales conducted at least through December 2027 and potentially thereafter. Before it conducts the second and each subsequent lease sale, the BLM will evaluate the adequacy of the Draft EIS requires supplementation or revision in order to comply with NEPA" (from volume 1, I-5.) First, the clause "and potentially thereafter" should be deleted from the Draft EIS. As stated, the Draft EIS would fulfill NEPA	(see above)

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23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	in light of new information and circumstances to determine whether it requirements forever, and that clearly does not make sense. Second, this clause says the second and each subsequent lease sale. Only two sales have been authorized, so this language needs to be fixed. I understand that BLM thinks it may employ a phased approach, but this whole section is unclear and needs to be rewritten. Furthermore, the Draft EIS does not say how BLM will evaluate the adequacy of the Draft EIS to determine whether it requires supplementation. Will there be additional public scoping? What notice will the public get in order to comment? How BLM plans to determine whether the EIS requires supplementation or revision needs to be detailed in this Draft EIS.[comment end]	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Hal	Shepherd	Norton Bay Inter-Tribal Watershed Council	83235	1	ANILCA (Alaska National Interest Lands Conservation Act)	Expansion of FRWRs occurs in Alaska as well where Federal district courts, for example, have concluded that under Title VIII of ANILCA, the United States holds title to an interest in Alaska's navigable waters as an element of the "federal navigational servitude." 6 Since the United States holds an interest in the navigable waters of Alaska, they meet ANILCA's definition of public lands and the Secretary of the Interior was charged with the management of subsistence fishing in the navigable waters of Alaska.7 A couple of federal court opinions support the trust duty in relation to FRWRs as they relate to tribal water interests. In Alaska v. Babbitt, commonly referred to as "Katie John," for example, the Ninth Circuit concluded that public lands in Alaska include certain navigable waters, defined by the reserved water rights doctrine which states that when the United States withdraws lands from the public domain and reserves them for a federal purpose, it implicitly reserves water then unappropriated to the "extent needed to accomplish the purpose of the reservation."8 The Lease Sales, therefore, in conflict with the Trust Duty based on the fact that oil and gas leasing could cause significant and irreversible harm to the area's water and subsistence resources. The potential during drilling operations to contaminate ground water, for example is in conflict with the Federal Clean Water Act (CWA) enacted by Congress "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 9	The lease stipulations and ROPs are designed to prevent significant impacts on water and subsistence resources, thereby maintaining compliance with the CWA and Title VIII of ANILCA..

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Hal	Shepherd	Norton Bay Inter-Tribal Watershed Council	83235	5	ANILCA (Alaska National Interest Lands Conservation Act)	In keeping with our comments on tribal consultations as stated above, we believe that BLM has to consult with all tribes that could potentially be impacted by the project beyond those of Kaktovik. This will also be relevant for complying with provisions of Section 810 of ANICLA because significant restrictions on the subsistence uses of the program area by tribes and native persons, others than those in the community of Kaktovik, is very likely, and BLM should conduct tribal consultations/hearings, and incorporate the measures voiced by those consulted into the reasonable steps needed to be taken to lessen the adverse effects on subsistence. Further, while BLM states that "the Final Evaluation will integrate input voiced during the hearing by the residents of Kaktovik," (DEIS, Appendix E, E-20) this should have been incorporated in the DEIS itself, in order for stakeholders to give full comments on the outcomes of such	See Appendix C for a list of the tribal consultation that has occurred to date. The Subsistence Section 810 hearing was held in Kaktovik after the release of the Draft EIS, as required by Section 810(a)(2) of ANILCA. Input received from residents of Kaktovik and other communities during scoping was incorporated into the Draft EIS, whereas the Final EIS incorporated similar information received during the subsistence hearing in Kaktovik, public meetings on the Draft EIS, and written comments submitted on the Draft EIS.

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26.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	32	ANILCA (Alaska National Interest Lands Conservation Act)	Local landowners KIC and ASRC, whom together own 92,000 acres of the Coastal Plain, also have the right to develop their own lands to provide economic benefits to their shareholders as set forth in the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Land Conservation Act (ANILCA). The BLM and the FWS have a responsibility to not hinder the pursuit of that goal through burdensome restrictions and a complex and complicated land management structure that would affect adjacent Native landowners. We do not feel that the CCP in its current form, which essentially mandates that the Coastal Plain be managed as if it were a wilderness, is compatible with a leasing program. VOICE urges the BLM to recommend updating the CCP prior to leasing to more closely align with the directive put forth in the Tax Act: to establish and administer a competitive oil and gas leasing program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain. We feel strongly that immediate action be taken on this to avoid further confusion, frustration, and lack of trust from the community of Kaktovik towards the federal government	After BLM adopts a specific leasing program alternative in its Record of Decision, the USFWS will be revising its CCP to address the five purposes of the Arctic Refuge, as amended by the Tax Act, and its management strategies. BLM's oil and gas program will affect the USFWS's management of the Refuge in the Coastal Plain, and thus it will aid the CCP revision process to first know which program alternative BLM adopts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Withheld	Withheld	Government of the Northwest Territories	92862	31	ANILCA (Alaska National Interest Lands Conservation Act)	The analysis by Russell and Gunn (2019) 2indicates the proposed oil and gas leasing program has a high risk of impacts to herd abundance, which has the potential to impact NWT communities. The BLM is planning on holding a public subsistence hearing in the potentially affected community of Kaktovik because the “preliminary evaluation finds that the cumulative case, when taken in conjunction with Alternatives B, C, D1, and D2 may significantly restrict subsistence uses and needs for the community of Kaktovik.” Porcupine caribou are a highly valued traditional, cultural and subsistence resource for NWT communities in the Gwich'in Settlement Area and Inuvialuit Settlement Region of the NWT. The main users of the herd in the NWT include Inuvialuit and Gwich'in people from Aklavik, Inuvik, Fort McPherson and Tsiigehtchic. Recommendation The GNWT recommends that, as part of fulfilling the obligations in the Agreement, public subsistence hearings should be held at a minimum in the Canadian communities of Fort McPherson and Aklavik and Tsiigehtchic. The BLM should ensure that the Hunters and Trappers Committees, Renewable Resource Councils and public are notified of such meetings.	Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of “subsistence uses” in Section 803 of ANILCA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Karen	Bollinger	—	94054	2	ANILCA (Alaska National Interest Lands Conservation Act)	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA (Alaska National Interest Lands Conservation Act) which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, they then find that Gwich'in subsistence use will not be affected. This ignores the traditional knowledge and human rights of the Gwich'in.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
29.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	7	ANILCA (Alaska National Interest Lands Conservation Act)	DEIS section 810 evaluation finds that Gwich'in communities will not experience significant restrictions on subsistence uses, even after the Gwich'in expressed significant concerns related to food security and cultural identity. BLM does not find significant restrictions for any Gwich'in communities, and fails to even consider Canadian villages. Due to these incorrectly limited findings, the agency did not hold ANILCA 810 hearings in any Gwich'in communities.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.

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30.	—	—	Alaska Department of Natural Resources	94102	17	ANILCA (Alaska National Interest Lands Conservation Act)	The original Arctic Range purposes ⁵ are referenced in the second paragraph as having "...three purposes of preservation: wilderness values, wildlife, and recreational values." The EIS must also reference the savings clause in ANILCA Section 305, which states that while executive or administrative enabling actions for existing units of the Refuge system are still in effect (the Arctic Range was established by Public Land Order 2214), in the event of a conflict, the provisions of ANILCA and the Alaska Native Claims Settlement Act prevail. ⁶ As such, there are limits to the applicability of the original Range purposes, especially in relation to the new refuge purpose to establish and oil and gas leasing in the Coastal Plain.	The language has been revised to indicate that the original purposes established by PLO 2214 were superseded by Section 303(2)(B) of ANILCA, as amended by the Tax Act.
31.	—	—	Alaska Department of Natural Resources	94102	18	ANILCA (Alaska National Interest Lands Conservation Act)	ANILCA Section 101(b) is accurately quoted; however, the discussion needs to clarify that the quote applies generally to the purposes of the Act as a whole and are not specifically attributed to the Arctic Refuge as currently implied. Other provisions in ANILCA Section 101 clarify Congressional intent in balancing the national conservation interest with the economic and social needs of Alaska and its citizens, which is also relevant to the EIS but not referenced in the discussion. So as not to mislead the public, the discussion of Section 101 of ANILCA in the Final EIS must be discussed more comprehensively by including summaries of all subsections, not just 101(b).	The text has been modified to indicate that Section 101(b) addresses the purposes of ANILCA as a whole. Given that the section is about wilderness character, Section 101(b) is the only relevant provision that speaks to purposes of ANILCA.
32.	—	—	Alaska Department of Natural Resources	94102	19	ANILCA (Alaska National Interest Lands Conservation Act)	The second paragraph references ANILCA section 304(g)(2)(B), implying that ANILCA granted the Service authority to conduct the 2015 wilderness review. This is inaccurate.	Section 304(g)(2)(B) is accurately quoted. It requires the identification of wilderness values prior to undertaking the development of a refuge CCP.

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33.	—	—	Alaska Department of Natural Resources	94102	20	ANILCA (Alaska National Interest Lands Conservation Act)	In 1980, ANILCA expanded and re-designated the Arctic Range as the Arctic National Wildlife Refuge. 6 "All proclamations, Executive orders, public land orders, and other administrative actions in effect on the day before the date of the enactment of this Act with respect to units of the National Wildlife Refuge System in the State shall remain in force and effect except to the extent that they are inconsistent with this Act or the Alaska Native Claims Settlement Act, and in any such case, provisions of such Acts shall prevail." (ANILCA Section 305) provision in ANILCA that granted the Service any authority to conduct a wilderness review is Section 1317, the timeframe for which has long passed. 7 ANILCA Section 1326(b) bars the Service from conducting new wilderness reviews absent subsequent direction from Congress. 8 The sentence "Further, ANILCA 304(g)(2)(B) requires the Secretary of Interior to identify and describe 'the special values of the refuge, as well as...wilderness value of the refuge' when developing plans" must be removed.	Section 304(g)(2)(B) is accurately quoted. It requires the identification of wilderness values prior to undertaking the development of a refuge CCP.
34.	—	—	Alaska Department of Natural Resources	94102	22	ANILCA (Alaska National Interest Lands Conservation Act)	Further, as referenced in the above WSR comments, ANILCA included numerous exceptions for designated wilderness in Alaska, including the ability to authorize transportation and utility systems, motorized use, and other development in designated wilderness; therefore, these administrative restrictions exceed those intended by Congress for designated wilderness in Alaska. It is inappropriate to apply them as restrictions either within or beyond designated wilderness. All designated wilderness buffers and related restrictions must be removed in the Final EIS.	Since the NSO area would not establish a withdrawal, conservation system unit, or similar area, it is not precluded by Section 1326 of ANILCA.

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35.	—	—	Alaska Department of Natural Resources	94102	84	ANILCA (Alaska National Interest Lands Conservation Act)	60 Appendix E, Table E-1 ANILCA 810 Analysis Re-examine all values in this table. The No surface occupancy/not offered for lease sale numbers presented for Alternative D1 and D2 do not match any number provided elsewhere in the document.	The table has been revised.
36.	Withheld	Withheld	—	94435	3	ANILCA (Alaska National Interest Lands Conservation Act)	A significant portion of Gwich'in subsistence comes from the Porcupine Caribou Herd, BLM concluded that there will be no impact on the Gwich'in subsistence food source, even while acknowledging oil and gas impacts on caribou. BLM asserted that the Gwich'in do not qualify for an 810 hearing (necessary under the Alaska National Interest Lands Conservation Act), which is required for development that will substantially affect subsistence.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
37.	Linda	Brown	—	94624	1	ANILCA (Alaska National Interest Lands Conservation Act)	Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, this Draft EIS finds that Gwich'in subsistence use will not be affected. The BLM must hold an 810 hearing with potentially impacted subsistence users before the ROD is finalized.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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38.	Withheld	Withheld	Council of Athabascan Tribal Governments	95611	5	ANILCA (Alaska National Interest Lands Conservation Act)	"The intent of Title VIII of ANILCA is to protect subsistence use, and . . . the Section 810 process has the ultimate goal of identifying ways in which impacts to subsistence can be minimized through the Notice and Hearings process." Indeed, the threshold to hold hearings is that there "may" be impacts. BLM has not erred on the side of protection in its 810 analysis. Instead, BLM has chosen to ignore the significant direct and cumulative impacts to the Gwich'in, including the ways in which impacts to some communities will ripple out to other communities in light of community sharing practices. All of BLM's proposed action alternatives would result in: 1. displacement impacts on calving PCH caribou, 2. increased calf mortality, and 3. impacts to migration patterns, and therefore may substantially restrict and/or reduce the abundance and availability of PCH for substance uses. BLM is required to find a positive 810 determination for all communities where there may be significant restriction subsistence, direct or cumulative, for all development alternatives. Again, the Council calls upon BLM to conduct an intensive and comprehensive ANILCA 810 analysis including Arctic Village, Venetie, and Fort Yukon at a minimum that include adequate evaluation, notice, and hearings.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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39.	Brook	Brisson	Trustees for Alaska	96981	3	ANILCA (Alaska National Interest Lands Conservation Act)	Congress regarding whether the Coastal Plain should be opened to oil and gas development. ¹³ To be clear, ANILCA did not open the Coastal Plain to oil and gas and BLM's statement in the draft EIS that Congress designated the Coastal Plain as an area for potential oil development is patently incorrect. ¹⁴ In 1980, with the passage of ANILCA, Congress designated the Coastal Plain as a National Wildlife Refuge and expressly prohibited oil and gas development. ¹⁵ This error must be corrected. [DEIS vol. 1 at 3-37; ANILCA Sections 303, 1003]	The text has been revised to indicate that Section 1002 identified the Coastal Plain for study for potential oil and gas leasing and development.

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40.	Brook	Brisson	Trustees for Alaska	96981	24	ANILCA (Alaska National Interest Lands Conservation Act)	Additionally, the DEIS asserts that it lists all "requirements of federal, state, and local laws and regulations associated with future development in the Coastal Plain."78 That list mentions some sections of ANILCA but fails to mention Title XI, which provides the "single comprehensive statutory authority for the approval or disapproval" of transportation and utility systems (TUSs) on conservation system units (CSUs) in Alaska.79 TUSs include roads, pipelines, and energy transmission systems, and all related structures and facilities needed to construct, maintain and operate them.80 Sections 1104-1106 of ANILCA set forth the detailed procedural and substantive requirements governing any approval or disapproval of a proposed TUS in a CSU.81 A decision that purports to authorize a TUS in a CSU without complying with the requirements of Title XI can have no effect.82 This means that the leasing process cannot convey a right to develop virtually any of the typical components of an oil and gas development unless it complies with Title XI.83 [83 The DEIS repeatedly states that "certain rights" are conveyed to lessees at the lease sale stage. E.g., DEIS vol. 1 at 3-133. BLM should clarify what it believes these rights to be and explain that any proposed TUS is conditional on compliance with the Title XI process, which inherently includes agency discretion to approve or disapprove. BLM cannot circumvent or rewrite Title XI with a lease]	Appendix D has been revised to list ANILCA Title XI. Title XI does not affect the rights provided by an oil and gas lease under applicable law.

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41.	Brook	Brisson	Trustees for Alaska	96981	25	ANILCA (Alaska National Interest Lands Conservation Act)	The DEIS's characterization of the Secretary's authority to issue rights-of-way, and especially its complete omission of Title XI from the list of applicable federal laws, leave the distinct impression that BLM believes that the substantive and procedural requirements of Title XI have somehow been waived for oil and gas development in the coastal plain. They have not been waived. As stated during bill passage, and as is discussed further in these comments, no laws were being waived by the Tax Act. ⁸⁶ BLM must make clear the applicability of Title XI to the approval or disapproval of any TUS that a future lessee may seek to establish.	Appendix D has been revised to list ANILCA Title XI. Title XI does not affect the rights provided by an oil and gas lease under applicable law.
42.	Brook	Brisson	Trustees for Alaska	96981	122	ANILCA (Alaska National Interest Lands Conservation Act)	There are serious questions about the authority to conduct gravel mining on the Coastal Plain. ANILCA section 304(c) withdrew all national wildlife refuge lands in Alaska "from all forms of appropriation or disposal under the public land laws" except for the mineral leasing laws. ⁸³² The Coastal Plain is further withdrawn from all forms of entry or appropriation under the mining laws and from operation of the mineral leasing laws. ⁸³³ The Tax Act did not modify these withdrawals. BLM has failed to identify any authority allowing it to permit gravel mining on the Coastal Plain, despite the fact that the EIS appears to assume gravel mining will be allowed. BLM needs to explain what it believes is the basis for its authority to allow gravel mining in the EIS.	The Materials Act of 1947 authorizes the disposition of mineral materials from federal public lands. ANILCA Section 304(c) does not prohibit the sale of mineral materials. The Tax Act amended the withdrawal in Section 1002(i) of ANILCA to require an oil and gas leasing and development program.

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43.	Ted	Heuer	—	97531	2	ANILCA (Alaska National Interest Lands Conservation Act)	At the end of the 185-page Tax Cuts and Jobs Act (Public Law 115-907) there is a provision that amends the Alaska National Interest Lands Conservation Act (ANILCA) and adds a fifth purpose to the Arctic National Wildlife Refuge, "to provide for an oil and gas program on the Coastal Plain." Section 304 (a) of ANILCA which directly follows the new purpose of the Coastal Plain states, "Each refuge shall be administered by the Secretary, subject to valid existing rights, in accordance with the laws governing the administration of units of the National Wildlife Refuge System, and this Act." Nothing in the Tax Cuts and Jobs Act amends this section of ANILCA.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas; however, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities.
44.	Francis	Mauer	—	97757	2	ANILCA (Alaska National Interest Lands Conservation Act)	The purposes of Executive Order 2214 and ANILCA have not been explicitly nullified by the Tax Cut Act, however, the DEIS does not clearly explain how these purposes will be affected by the proposed oil lease sales. Furthermore, the DEIS errors in claiming that Congress designated the coastal plain for potential oil development.[3] In fact, an assessment of potential hydrocarbon resources and the fish, wildlife and habitats was required including impacts of possible development. In addition, Congress prohibited any production of oil and gas from the Refuge and no leasing or other development leading to production was allowed (Section 1003 of ANILCA). The BLM must correct this misleading statement.	The Tax Act amends ANILCA to provide for an oil and gas program in the Coastal Plain of the Arctic National Wildlife Refuge. The USFWS will be revising its CCP to address the five purposes of the Refuge, as amended by the Tax Act, and its management strategies. The text has been revised to indicate that Section 1002 identified the Coastal Plain for study for potential oil and gas leasing and development.

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45.	—	—	United States Fish and Wildlife Service	97942	58	ANILCA (Alaska National Interest Lands Conservation Act)	[Section 810 Analysis] Conclusions of no positive findings for Alternatives B, C, and D within the DEIS (e.g., the DEIS concludes that Alternatives B, C, and D will not result in a significant restriction in subsistence uses) are not justified, particularly in light of a positive finding for the cumulative case. The potential impacts on caribou abundance, distribution, and movements are far more likely to affect availability of caribou to subsistence users throughout the PCH range than the relatively minor, local effects of limiting access by Kaktovik residents to some areas on the coastal plain. Statements such as "Potential impacts on subsistence resources and access from future oil and gas exploration, development, and production would be minimal or would be adequately mitigated by stipulations or ROPs..." (page E-10) may be overly optimistic given that these recommendations were mostly developed for oilfields farther west, and have not been tested for the PCH. Given the lack of testing for the PCH, there is uncertainty regarding the effectiveness or adequacy of the mitigation measures in this situation. This means that abundance and, or movements of the PCH could be substantially affected, with resultant effects on availability of caribou to subsistence hunters throughout the herd's range. Recommend this uncertainty be acknowledged by a positive determination for all the action alternatives.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and OPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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46.	—	—	United States Fish and Wildlife Service	97942	59	ANILCA (Alaska National Interest Lands Conservation Act)	[Section 810 Analysis] Section E.3-22, Page E-7: The DEIS states, "In general, caribou responses to aircraft adhering to effective stipulation measures tend to be short-lived (Fullman et al. 2017)." Fullman et al. (2017) has been frequently mischaracterized in the literature. These authors used a limited dataset on take-offs and landings and did not consider flight altitude and patterns near the herd, distance from lead caribou, private aircraft, disturbance near narrow mountain corridors, or any number of other potentially important factors. The authors do, however, indicate that their results are limited to movements within the Noatak River valley. Given that, this paper does not lend itself to the broad application suggested in the 810 analysis. Additionally, it should be highlighted that the short-term effects of aircraft activity on caribou movements and resultant hunter success may be critical to subsistence opportunity and food security. This concern is frequently voiced by subsistence hunters of the coastal plain.	Citations have been reviewed and updated for accuracy.

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47.	—	—	United States Fish and Wildlife Service	97942	60	ANILCA (Alaska National Interest Lands Conservation Act)	[Section 810 Analysis] Section E.3-22, Page E-7: The DEIS states, "Low-level flights or maneuvering in the presence of unhabituated caribou can elicit increased speed and abrupt direction change. Alternatively, caribou can become habituated to aircraft, particularly when aircraft pilots maintain altitudes greater than 500 feet above ground level and do not haze or harass the caribou (Valkenburg and Davis 1983)." Habituation and avoidance behavior may take quite some time and this should be pointed out in the 810 analysis. A recent analysis by the Office of Subsistence Management included the following information: studies [of caribou] have also reported reduction in the use of areas within 5 km from infrastructure and human activity (including aircraft) by 50-95% for weeks, months, or years (Vistnes and Nelleman 2008, Flydal et al. 2002). We recommend the potential for reduced use of areas in proximity to infrastructure be fully disclosed.	Citations have been reviewed and updated for accuracy.

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48.	—	—	United States Fish and Wildlife Service	97942	61	ANILCA (Alaska National Interest Lands Conservation Act)	[Section 810 Analysis] Section E.3-22, Page E-7: The DEIS states, "Caribou crossing success would vary by season, behavioral motivation, level of habituation, and activity levels" but also states on page E-6, "Caribou abundance or availability and the subsistence use thereof would not likely be affected as a result of direct habitat loss." These statements seem incongruent as there are too many unknowns about the short and long-term changes to migration patterns that may result. Minor changes, even if temporary, may have major impacts to subsistence if caribou move further from communities and traditional hunting grounds. Caribou migration patterns are very complex and the Fullman et al. (2017) paper, though a useful starting point, should not be considered definitive evidence of minimal effect. As mentioned in previous comment, habituation can take months or years.	The statements are compatible.
49.	—	—	United States Fish and Wildlife Service	97942	62	ANILCA (Alaska National Interest Lands Conservation Act)	[Section 810 Analysis] With regards to ensuring a meaningful subsistence experience, page 3-12 I of the DEIS includes the following: "In addition to affecting resource availability, future noise, traffic, and human activity may also affect user access by deterring subsistence users from their usual harvesting areas. Avoidance of subsistence use areas due to development has been documented in Nuiqsut (SRB&A 2017) and would likely occur for some Kaktovik harvesters if development occurs in their harvesting area. Residents may experience discomfort hunting in the presence of outsiders; may avoid hunting near areas of high air or ground traffic because of a perceived or actual reduction in the availability of subsistence resources; may avoid hunting near activity due to safety concerns; or may consider noise	The 810 evaluation text has been revised to reflect additional language from the Draft EIS as appropriate.

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49. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	pollution and increased human activity to degrade the subsistence experience." We recommend the above language also be included in the 810 analysis. The ANILCA protects and recognizes many values associated with subsistence, far beyond the nutritional value. The cultural values associated with the subsistence "experience" need to be explicitly stated. In one example, noise pollution may affect these experiences as was noted in Chapter 3. We recommend including factors discussed in Halas (2015) as important factors affecting the subsistence experience. One potentially relevant quote from this paper: "Whether the aircraft intentionally or unintentionally may be 'influencing' caribou movement, observing 'scared' caribou can be a powerful experience for hunters. Observations of caribou disturbance may impact the quality of a good hunting experience for a subsistence hunter. Respondents who perceived that caribou are impacted by the behavior of aircraft may evaluate their own harvest success to the interaction between aircraft and movement of caribou."	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Adam	Kolton	—	98142	1	ANILCA (Alaska National Interest Lands Conservation Act)	is that your EIS absolutely disregards the responsibilities under the Alaska National Interest Lands Conservation Act to consult in a formal subsistence way with these Gwich'in villages. And it's extraordinary because you do that after acknowledging there are going to be impacts to the Porcupine caribou herd.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.
51.	Brook	Brisson	Trustees for Alaska	98269	16	ANILCA (Alaska National Interest Lands Conservation Act)	The finding that there may not be impacts to subsistence use and resources for Gwich'in villages is contrary to science and BLM's own discussion elsewhere in the Draft EIS. The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving, post-calving and summer habitat. Because of this connection, protecting the Coastal Plain is vital to their human rights and food security. Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores the traditional knowledge and human rights of the Gwich'in, a problem which is exacerbated by the fact that BLM will not hold ANILCA 810 hearings in any Gwich'in communities.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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52.	Brook	Brisson	Trustees for Alaska	98270	51	ANILCA (Alaska National Interest Lands Conservation Act)	BLM's finding of no significant restrictions on subsistence for Gwich'in communities under ANILCA section 810 is in error. The ANILCA 810 analysis improperly finds that impacts to the Porcupine Caribou Herd do not impose significant restrictions on the Gwich'in's subsistence hunting activities.1670 It is critically important that BLM release preliminary findings and recommendations in a revised 810 analysis so that the agency can receive input on them before the agency finalizes them. These findings and recommendations will allow BLM to appropriately consider of sociocultural impacts to subsistence hunting and reduced opportunities to participate in other subsistence activities. The deficiency from not completing an adequate 810 analysis is reflected in BLM's incomplete analysis of impacts to the Gwich'in people's sociocultural systems.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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53.	Brook	Brisson	Trustees for Alaska	98270	227	ANILCA (Alaska National Interest Lands Conservation Act)	The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. Though the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain. ²¹⁰¹ The draft EIS recognizes that many other communities, such as Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole. ²¹⁰² BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users." ²¹⁰³ Despite this, BLM arbitrarily limits its ANILCA 810 analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie. ²¹⁰⁴ BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in the remaining potentially affected communities, as required by ANILCA 810.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA. Section E.2 of the subsistence evaluation explains in detail why the evaluation focused on the four communities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Brook	Brisson	Trustees for Alaska	98270	230	ANILCA (Alaska National Interest Lands Conservation Act)	BLM also states in analyzing the cumulative case that potential impacts to caribou abundance would be "minor due to the speculative locations of future proposed infrastructure." 2107 Speculative does not equal minor; the uncertainty about the exact location of infrastructure does not mean that the impacts to subsistence would be minor, particularly if that infrastructure is ultimately located in sensitive areas or disrupts migration patterns or obstructs migration corridors. BLM cannot circumvent doing a robust analysis of the potential impacts merely because the impacts are potentially speculative at this stage. BLM needs to analyze the full range of potential impacts to determine if it might cause impacts to subsistence, and needs to follow a precautionary approach in making those determinations.	The 810 evaluation text has been revised to reflect additional language from the Draft EIS as appropriate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Brook	Brisson	Trustees for Alaska	98270	231	ANILCA (Alaska National Interest Lands Conservation Act)	The 810 analysis concludes “[l]egal and physical access to subsistence resources may be altered, depending on the locations of CPFs and industry-established safety areas; however it is likely that large-scale access to subsistence resources would be maintained.” ²¹⁰⁸ BLM appears to dismiss what it acknowledges will be impacts to subsistence by writing them off as unclear at this point since it does not know the exact infrastructure location. That is contrary to Section 810 and its purpose. BLM cannot write off impacts by concluding it does not know the exact location well enough to analyze them; it needs to actually take the time to analyze all potential impacts to subsistence, including cumulative impacts. BLM’s conclusion that it is “likely” on a large scale that access will be maintained is also not sufficient. When the agency is evaluating the potential impacts to subsistence, if the action “may” restrict subsistence uses, BLM is required to take a precautionary approach and comply with the notice and hearing procedures in Section 810. ²¹⁰⁹ BLM’s conclusion that it is “likely” on a wholly undefined “large-scale” that there will not be impacts is unsupported and meaningless. BLM cannot ignore the significance of these impacts by viewing them on such a large scale that effectively hides those impacts; it needs to look at what those impacts could look like at both local and broader scales. BLM failed to follow that precautionary approach with these findings, contrary to Section 810 and BLM’s guidance.	At the leasing stage the location of potential oil and gas facilities is unknown. Additional 810 evaluations would be performed when applications for specific exploration and development proposals are submitted.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Brook	Brisson	Trustees for Alaska	98270	232	ANILCA (Alaska National Interest Lands Conservation Act)	BLM's overall analysis of specific subsistence resources is also insufficient. As discussed in more detail in the next section, oil and gas leasing on the Coastal Plain is likely to have significant impacts on the Porcupine Caribou Herd, which will in turn restrict the abundance and availability of the herd for subsistence use. In the draft EIS, BLM states that "[d]evelopment would not significantly affect the availability of caribou for subsistence use." ²¹ 10 This assumption erroneously assumes that caribou and other subsistence resources will still be present in the area despite the high likelihood of disturbance from noise and human activity. There are also potentially significant impacts to access to subsistence resources if subsistence users are physically blocked from accessing key subsistence resources, as has been the case in Nuiqsut. BLM fails to explain how the fully waivable lease stipulations, ROPs, and mitigation measures will ensure that caribou will not be deterred from this area and that hunters will still be able to access these resources.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. For the cumulative case, which takes into account potential impacts from past, present, and reasonably foreseeable oil and gas activities occurring in the Coastal Plain and in other areas on the North Slope, the ANILCA 810 evaluation concluded that Kaktovik may experience a substantial reduction in access to its traditional subsistence use areas; thus, Kaktovik may experience a significant restriction to its subsistence use. Stipulations/ROPs cannot be waived if objectives are not met.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Brook	Brisson	Trustees for Alaska	98270	233	ANILCA (Alaska National Interest Lands Conservation Act)	BLM further assumes that hunters will be able to adapt to the changes occurring around them.2111 BLM cannot rely on the potential for adaptation to bypass a positive subsistence finding under Section 810. How BLM foresees hunters adapting should be described. It is also necessary to consider that all hunters may not be able to adapt because of factors like increased cost of travel to more distant subsistence use areas and the need for better machinery to do so, which is not necessarily available to everyone that may be impacted. BLM should analyze and describe the limitations of adaptation to changed subsistence practices, resources, and conditions on the landscape. 2111 See, e.g., DEIS vol. 1 at 3-177.	Hunter adaption has been observed in Nuiqsut, which is near substantial oil and gas development. Notwithstanding, for the cumulative case, which takes into account potential impacts from past, present, and reasonably foreseeable oil and gas activities occurring in the Coastal Plain and in other areas on the North Slope, the ANILCA 810 evaluation concluded that Kaktovik may experience a substantial reduction in access to its traditional subsistence use areas.
58.	Brook	Brisson	Trustees for Alaska	98270	235	ANILCA (Alaska National Interest Lands Conservation Act)	There are also numerous impacts to fish that are not adequately considered in the draft EIS. The draft EIS acknowledges that non-salmon fish, including Dolly Varden and Bering cisco, are important subsistence resources and that there could be impacts to both abundance and availability under Alternatives B and C.2112 This alone is sufficient to trigger a positive finding under ANILCA 810 as subsistence use “may be affected.”	In order to trigger a positive “may significantly restrict” finding under ANILCA 810, impacts on abundance and availability must be large or major, respectively (BLM 2011).

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59.	Brook	Brisson	Trustees for Alaska	98270	239	ANILCA (Alaska National Interest Lands Conservation Act)	BLM's analysis of impacts to marine mammals also completely fails to address impacts to polar bears and subsistence take of polar bears. The 810 analysis' marine mammals section does not even mention polar bears.2122 BLM appears to have dismissed the analysis of any impacts to subsistence take of polar bears on the grounds that they do not comprise the majority of the wild foods subsistence users in the region consume.2123 BLM's failure to account for impacts to polar bears is a serious omission from the 810 analysis. Impacts from seismic exploration alone, which BLM has not adequately analyzed elsewhere in the EIS, are significant and could lead to injury and lethal take of polar bears, particularly given the significant limitations and flaws with technologies used to detect denning polar bears. Any additional take of polar bears could have potentially serious impacts to this already imperiled species and its population, which could in turn impact subsistence take of polar bears. BLM needs to fully analyze this in its 810 analysis and elsewhere in the EIS.	Subsistence impacts are primarily subsistence use of fish, marine mammals (bowhead and beluga whales, and bearded seals), and caribou. Other resources such as waterfowl, polar bears, and furbearers may be culturally important to residents of these communities, but they do not comprise the majority of the wild foods consumed by residents of Kaktovik, Nuiqsut, Arctic Village, or Venetie (Section 3.4.3, Subsistence Uses and Resources). Under the ESA and MMPA, oil and gas activities may not be authorized if impacts on polar bears would be significant.
60.	Brook	Brisson	Trustees for Alaska	98270	240	ANILCA (Alaska National Interest Lands Conservation Act)	BLM's failure to make a positive finding for Gwich'in communities should not absolve the agency of its obligation under tier-2 of ANILCA 810. Under tier-2, if a proposed action would significantly restrict subsistence uses, BLM can only adopt that action if it finds that the restriction on subsistence is necessary and consistent with sound public lands management principals; involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and takes reasonable steps to minimize the adverse impacts to subsistence uses and resources	The 810 evaluation has been revised to better describe the Tier 2 determinations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	from any use. 2124 BLM's evaluation of the availability of other lands for the purposes sought to be achieved and analysis of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence are also wholly inadequate. BLM's analysis of the availability of other lands provides only a cursory summary of the Tax Act and concludes that the alternatives would fulfill the purpose of the statute.2125 BLM's evaluation of alternatives that would reduce or eliminate the use of lands needed for subsistence similarly states that the action alternatives would meet the purpose of the Tax Act and notes that some of the alternatives would result in less land being available for leasing.2126 This is not a meaningful evaluation of the ways in which BLM can reduce impacts to subsistence. The 810 analysis fails to recognize that BLM is in no way obligated to open the entire Coastal Plain to leasing. BLM has not only the ability to further limit the areas it offers for lease, but an obligation under Section 810 to only allow an action if it is involves the minimal amount of public lands necessary to accomplish the purpose.2127 BLM's cursory evaluation and apparent assumption that there is no difference between the different alternatives and how they relate to subsistence impacts goes against the requirements of Section 810 and fails to provide a meaningful evaluation of how BLM can minimize the impacts to subsistence users.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Brook	Brisson	Trustees for Alaska	98270	242	ANILCA (Alaska National Interest Lands Conservation Act)	BLM's failure to make a positive ANILCA 810 determination for Arctic Village, Venetie, and all other communities who rely on the Porcupine Caribou Herd is in error.2128 The Porcupine Caribou Herd (PCH) uses the Arctic Refuge throughout the year, with the Coastal Plain providing essential calving, post-calving, insect relief, and other summer habitat.2129 The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving, post-calving and other summer habitat. Despite acknowledging that oil and gas can have impacts on the Porcupine Caribou Herd, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores best available science, traditional knowledge, and the human rights of the Gwich'in - a problem which is exacerbated by the fact that BLM will not hold ANILCA 810 hearings in any Gwich'in communities. BLM should hold 810 hearings in all communities where there may be impacts to subsistence. [2128 16 U.S.C. § 3120(a). 2129 See supra Part V.I (impacts to caribou); Caikoski. 2015.]	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.
62.	Brook	Brisson	Trustees for Alaska	98270	243	ANILCA (Alaska National Interest Lands Conservation Act)	For all development alternatives, BLM acknowledges some portion of the herd's high-use calving area will be subject to leasing and surface occupancy, and the likely result is displacement and a decline in calf survival.2130 Although the restrictions on surface occupancy and leasing are slightly more stringent for Alternative C and Alternatives D1 and D2, all of BLM's proposed action alternatives would result in some level of displacement impacts on calving caribou.2131 especially as impacts will extend across no surface occupancy	The BLM's analysis of impacts on caribou takes into account differences in the range of alternatives regarding when and where oil and gas activities may occur. . Section E.2 of the subsistence evaluation explains in detail why the evaluation focused on the four communities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	and no leasing boundaries.2132 Alternative B is particularly concerning, as it contemplates two central processing facilities, one of which could be located in area BLM identifies as a high-use calving area for the Porcupine Caribou Herd.2133 BLM concludes that there would be similar impacts under each of the alternatives because there would be only 2,000 acres of disturbance in the program area. 2134 This ignores the fact that there are likely to be very different impacts depending on where and when BLM allows infrastructure and industrial activity. BLM needs to analyze these differences and how they will impact subsistence, and cannot rely solely on the direct footprint of development. As explained above, the impacts of oil and gas development are felt far beyond the direct footprint of oil and gas projects. BLM's assertions that these impact will be minimal is in error. Any impacts to the Porcupine Caribou Herd on the Coastal Plain will be felt throughout their range in Alaska, the Yukon, and Northwest Territories and will result in a significant restriction to subsistence resources. BLM acknowledges the importance of caribou to 22 communities,2135 yet states that "Kaktovik, Arctic Village, and Venetie are the only communities that may be appreciably affected by changes in the abundance or availability of PCH caribou."2136 This conclusion is unsupported. There is again no explanation for BLM's wholesale failure to consider subsistence impacts to other Gwich'in communities.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Brook	Brisson	Trustees for Alaska	98270	244	ANILCA (Alaska National Interest Lands Conservation Act)	For the two Gwich'in communities considered under ANILCA 810, Arctic Village and Venetie, BLM incorrectly finds there will not be significant restrictions to the abundance of resources available for subsistence use. Factors that can contribute to a reduction in abundance include adverse impacts on habitat, direct impacts on the resource, increased harvest, and increased competition from non-subsistence harvesters. ²¹³⁹ As discussed in detail in Part V.I of these comments, there are likely to be significant adverse impacts to the Porcupine Caribou Herd from the oil and gas program. Activities associated with the oil and gas program will potentially cause a reduction in the Porcupine Caribou Herd's population, leading to a decline in the amount of harvestable resources. The draft EIS acknowledges that there will be adverse impacts on the Porcupine Caribou Herd and its habitat in multiple places, and yet still somehow finds there will not be significant impacts to subsistence. ²¹⁴⁰ It is unclear how BLM avoids finding a reduction in abundance of the Porcupine Caribou Herd, based on even the limited information in its own DEIS. This must be more clearly explained.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

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64.	Brook	Brisson	Trustees for Alaska	98270	249	ANILCA (Alaska National Interest Lands Conservation Act)	Because of the importance of the Porcupine Caribou Herd to all Gwich'in communities, in both Canada and the U.S., any impacts with the potential to decrease the population and harvestable resources will have a significant effect to all Gwich'in communities. BLM failed to account for the potential impacts to abundance, as well as how that will have an even broader impact to these communities in light of sharing practices. BLM's finding of no significant restriction to the abundance of subsistence resources for all Gwich'in communities that rely on the Porcupine Caribou Herd is arbitrary and contrary to science and the record before the agency.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely.

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65.	Brook	Brisson	Trustees for Alaska	98270	250	ANILCA (Alaska National Interest Lands Conservation Act)	The hypothetical development scenario description states, without scientific analysis, “[i]n caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration. Figure B-2, Conceptual Layout of a Caribou Area Stand-alone Oil Development Facility, shows how the hypothetical layout could be adjusted for caribou mitigation if deemed appropriate by permitting agencies.” ²¹⁵⁵ Figure B-2 depicts a slightly different layout of the roads radiating out from the Central Processing Facility to additional “satellite” drill sites, but no explanation is provided for assumptions about why it would be expected have a differing impact on caribou compared with Figure B-1. Furthermore, no analysis was provided for how a major road and transportation system and infield roads would affect caribou movements. BLM instead relies on the erroneous conclusion that caribou would simply “forage within the total footprint of a [central processing facility and its associated well pads]” to dismiss the idea that infrastructure would impact the availability of the Porcupine Caribou Herd. ²¹⁵⁶ There has been extensive research on negative impacts of roads associated with the Trans-Alaska Pipeline and the Prudhoe Bay oilfield complex to the Central Arctic Herd. ²¹⁵⁷ BLM needs to address these issues using strongly supported scientific information, and fully consider impacts to caribou movement, which would directly impact availability for subsistence use.	The EIS incorporates all relevant scientific literature regarding the impacts of roads and other oil and gas facilities on caribou.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Brook	Brisson	Trustees for Alaska	98270	251	ANILCA (Alaska National Interest Lands Conservation Act)	Furthermore, all alternatives recognize vehicle collision mortality, altered movement patterns from linear infrastructure, and air traffic impacts to the Porcupine Caribou Herd.2158 Although BLM claims some of these impacts can be mitigated with timing and surface limitations, BLM acknowledges that mitigation measures merely minimize, and do not eliminate impacts to subsistence.2159 BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability. BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not it is enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its analysis, as that could negate any of the purported protections and benefits of such provisions.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. Additional text has been added to Section 2.2.5 clarifying the process.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Brook	Brisson	Trustees for Alaska	98270	253	ANILCA (Alaska National Interest Lands Conservation Act)	In describing impacts of oil and gas development, BLM focuses on impacts resulting from oil and gas development activities on the Coastal Plain. There is absolutely no discussion of the 3 reasonably foreseeable future actions discussed in the bullets above. BLM completely failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. BLM limits its discussion on development in Alpine to existing oil and gas development activities. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut.	Reasonably foreseeable actions have been updated as appropriate. Willow and Alpine CD-5 are included in Appendix F.

S.3.5 Birds

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	41048	7	birds	The draft EIS contains a totally inadequate analysis of migratory birds on the coastal plain (see 3.3.3). The document admits on p. 3-85 that "detailed distribution and abundance data are lacking for many species" of birds. Oil development on the coastal plain would be catastrophic for migratory birds given the importance of the refuge to over 100 bird species. For example, over half the world's population of Emperor Geese migrate to the refuge. A major oil spill and loss of habitat could potentially wipe out what are now non-endangered bird species. The oil infrastructure, constant helicopter and truck movement during breeding season, chronic noise and oil spills would put migratory birds in peril. There should be no activity during breeding season.	Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. There are no emperor geese in the area. No bird species range is restricted to the refuge. Oil spills and chronic noise are discussed under Impacts Common to All Alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	42704	1	Birds	“Detailed distribution and abundance data for the program area are lacking for many, and contemporary data are lacking for most bird species. In addition, much of the contemporary data were collected for only 1 or 2 years, cover only a small portion of the program area, or were collected at low survey intensity.” These are globally unique wetlands that are the only breeding place in the world for several BLM sensitive species. The wetlands, according to this very report, are already threatened by climate change, with drastic changes in vegetation that will destroy suitable nesting sites and forage opportunities. Examples of this pattern of destruction abound, for species around the globe, and there is no science to suggest that climate change impacts at this site would be different. Yet the quoted sentences directly acknowledge that BLM has no idea of the current status of these breeding populations and therefore can only guess what the impact of the proposed oil and gas leases would be. This is therefore not a complete EIS, and it won't stand up in court. The Bureau must postpone any leasing until it completes a valid EIS.	Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. The existing data are summarized, and impacts on wildlife and habitat are assessed from each alternative. No bird species' range is restricted to the Refuge, including BLM sensitive species. While the wetlands in the Refuge are valuable habitat, they are not generally considered globally unique.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	James	Warren	—	45446	1	Birds	BLM lacks important data and should undertake to fill in the gaps in data BEFORE any exploration, seismic testing, or development takes place in the Arctic Refuge. Although there are historical survey data for the ARCP, as described in USFWS and BLM (2018), detailed distribution and abundance data for the program area are lacking for many, and contemporary data are lacking for most bird species. In addition, much of the contemporary data were collected for only 1 or 2 years, cover only a small portion of the program area, or were collected at low survey intensity. The program area contains far fewer water bodies, compared with sites farther west, such as Prudhoe Bay and the NPR-A. Because of this, many waterbirds and shorebirds are patchily distributed, which increases the difficulty in determining accurate abundance levels based on a small number of surveys. A few bird species have been relatively well studied on the ARCP, such as golden eagles and fall-staging snow geese (summarized in USFWS 2015a), but detailed distribution and abundance data are lacking for many species. Information about the various bird species and species groups found in the program area is summarized below.	Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. The existing data are summarized, and impacts on wildlife and habitat are assessed from each alternative. No changes were made in response to this comment.
4.	James	Warren	—	45446	2	Birds	44 species out of 156 is 28%. Is this not significant? Even the lowest percentage one could mention in this paragraph, say 8%, would be significant. Is it possible that BLM can present this material and then ignore it? It is prima facie evidence that there is potential harm to special status species in the Arctic Refuge, a population of some 28% of the total number of species present. This is significant. It needs to be studied in much more depth and for much longer.	No changes were made in response to this comment. The status of 44 species listed by ADFG as at-risk does not indicate significance alone; however, the impacts on these species are what is assessed for significance. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	James	Warren	—	45446	3	Birds	Waterbirds and Shorebirds: BLM states that there are 23 species of waterbirds confirmed breeders or migrants, and that 3 of these are BLM sensitive, 2 are USFWS birds of conservation concern, and 4 are ADFG at-risk species. Is this not a significant number of species? My count of waterbirds listed as at-risk by ADFG in Appendix J-9 has 5 species, not 4. Even with overlap in this list, we have 6 species out of 23 to consider, and that is 25% of waterbirds. If you use the other data given in Appendix J-9, with lists by Audubon, the percentage of at-risk species is much higher. In addition, these species are an important subsistence resource for residents in Kaktovik.	The status of 44 species listed by ADFG as at-risk does not indicate significance alone; however, the impacts on these species are what is assessed for significance. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action. Subsistence is discussed in Section 3.4.3.
6.	James	Warren	—	45446	4	Birds	The status of waterbirds and shorebirds is such that much more research must be done to determine the vulnerability and status of at-risk populations using the Arctic Refuge Coastal Plain each year. The whole North Slope is a teeming ground for migratory birds, and we have enough preliminary data to suggest that there are many populations that will be SIGNIFICANTLY harmed by oil and gas development in the Coastal Plain.	Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. The existing data are summarized, and impacts on wildlife and habitat are assessed from each alternative. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action. No changes were made in response to this comment.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	James	Warren	—	45446	5	Birds	Here we see that for an anchor field as drawn by BLM (how accurately we don't really know, fudged by that comment on configuration of roads), the actual loss of habitat is 15-16 times greater than the gravel footprint. And so the total loss would be 31,000 acres, by this calculation. This is only an estimate, depending on configuration of the road system built. Since we are not actually counting the gravel pits, the roads and their various impacts here, the real acreage will be greater than 31,000. Under Alternative D effects, BLM says the following: Alternative D effects Under Alternative D, potential long-term loss and alteration of habitat from direct and indirect effects of gravel deposition would occur over approximately 1.6 percent of the area available for leasing (1,037,200 acres). Disturbance and displacement could occur over about 3 percent of the area available for leasing. We should total this as a net loss of 4.6% of the area available for leasing. By my calculations, that means a loss (displacement is the same as loss if you are a bird!) of 47,711 acres. How does this relate to the estimate of 31,000 acres given in the previously analyzed paragraph concerning habitat impacts?	The text accurately states that the hypothetical anchor field is at best a rough approximation of potential direct and indirect impacts. There is, however, no other proposed development layout available on which to base an assessment. Gravel pits have been interpreted as included in the 2,000-acre maximum footprint and the text updated accordingly. Actual displacement and disturbance will occur over a much smaller area for nearly all species, as the text correctly states. The areas of habitat modification and the areas of disturbance and displacement overlap and are not, therefore, additive.
8.	Gregg	Spindler	—	45493	6	Birds	Given the short nesting season and extremely long migrations to lower latitudes, creation of an industrial zone and the associated human activities will certainly disrupt the successful production of young and also impact the ability of adequate feeding prior to migration. The impacts of human disturbances on snow geese has been well documented. ⁵ Indeed, it has been suggested that aircraft not be allowed overflight during nesting season.	No changes were made in response to this comment. Few, if any, snow geese nest in the Refuge, so aircraft restrictions to protect snow geese would need to occur during fall staging, when most birds use the Refuge.

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9.	Malkolm	Boothroyd	—	54092	3	Birds	The DEIS's section on birds is inadequate. For instance, the DEIS claims that potential marine oil spills would not be toxic to birds, but fails to provide a citation. The DEIS also claims that the risk of major oil spills is low, but cites data on historical oil spills around Kaktovik, rather than an area that has experienced the types of oil development foreseen for the Coastal Plain (see Table I-4). The DEIS makes unreliable assumptions on the zone of influence for oil infrastructure on birds, and ignores data that songbird nests may experience declined survival rates as far as 5 km from certain types of North Slope oil infrastructure.	The EIS statement on toxicity to birds was not regarding marine oil spill but spills of salt water. The BLM revised the text to clarify this. Discussion of the spill history in the NPR-A appears in Section 3.2.6 (page 3-38), and a history of North Slope spills appears in Section 3.2.11 (page 3-62 to 3-64). Reference to songbird nests in the existing oil field was from Liebezeit et al. 2009 (cited in the EIS), and that small but detectable decrease in nest survival was attributed to predation, not contaminants, as correctly stated in the EIS. The estimates for the zone of influence of indirect habitat alteration and of disturbance and displacement are conservative for most species (i.e., effects would occur over smaller areas).
10.	Pamela	Mayne	—	54228	3	Birds	on the section addressing the impact of oil development on birds, the BLM has not cited a single reference or scientific paper on which to base your conclusions.	The statement is inaccurate; many references are cited to describe the effects of development on birds. The section describing spill impacts has been revised.
11.	Withheld	Withheld	—	55209	8	Birds	This draft EIS also minimizes impacts to birds - millions of which, from every single state and continent including off the coast of Antarctica, come to the Refuge to breed, forage, and molt. The EIS must include more information about exactly how this development will affect birds throughout the continent.	The EIS makes no attempt to minimize any impacts. Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. Impacts are accurately described. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action. A section covering transboundary effects has been added for all resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Withheld	Withheld	Denver Audubon	57090	8	Birds	The most important functions of wetlands in the program area, according to the EIS, are wildlife habitat value and endangered species support. They provide nesting, brood-rearing and migration staging habitat for a variety of avian species (EIS, 3-69). We did not find a discussion of impacts of the loss of wetlands in the section on birds in the EIS.	Additional information on functional values of wetlands has been added to Section 3.3.1, Vegetation and Wetlands, and additional mention of wetlands has been incorporated into the Bird section. Note that the entire ARCP is considered wetlands and that a single wetland type (freshwater emergent wetland) is dominant, covering 83 percent of the program area. As described in Section 3.3.1, permafrost wetlands provide limited hydrologic and biogeochemical function, and their most important function is, therefore, typically wildlife habitat. This applies across the ARCP. Specific wetland equivalents for affected avian habitats are not provided in the Birds section because specific facility locations are unknown; however, all terrestrial, freshwater, and marine avian habitats mentioned are, indeed, wetlands and waters of the U.S., as accurately described in Section 3.3.1. All are important wildlife habitats.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Renae	Smith	Counsel for Environmental Protection	74336	44	Birds	The DEIS also fails to meaningfully analyze the impacts on migratory birds of oil spills, which could have grave consequences for migratory bird populations. Although the DEIS acknowledges that oil spills "pose risks of injury or death to birds," the DEIS largely dismisses this threat without meaningfully analyzing the impacts of spills or providing any evidence to support its conclusions. ²²⁷	Text regarding spills has been revised and expanded, and references have been incorporated for impacts that are well known, the most common and significant of which is death. Spill rates are discussed in Section 3.2.6, Petroleum Resources (page 3-38) and Section 3.2.11, Solid and Hazardous Waste. Large spills in the marine environment would be unlikely, and the EIS correctly indicates that such spills are possible in shipping lanes and near docking or STP sites. See page 3-39: "Operators would be required to prepare and implement spill prevention and control plans in compliance with applicable federal regulations." Spill prevention measures are presented in Appendix D, Section D.2.3 EPA, pages D-4 and D-5.
14.	Withheld	Withheld	Denver Audubon	57090	10	Birds	The Arctic Refuge Coastal Plain is recognized as an Important Bird Area by the National Audubon Society, American Bird Conservancy and Birdlife International (EIS, 3-84), which fact emphasizes its importance to national and international bird populations. The EIS discussion of impacts on populations is short and inadequate.	Impacts are accurately described. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action.

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15.	Withheld	Withheld	—	68965	69	Birds	39. Chapter 3; section 3.3.3, pages 3-85 to 3-103. Birds. Pg. 3-86. The ARCP represents a substantial portion of the Beaufort Sea coastline in Alaska. Accordingly, it also supports a large number of birds during the important nesting, rearing, and migration staging periods. For these reasons, the ARCP and adjacent marine waters are recognized as important bird areas by the American Bird Conservancy, Audubon, and Birdlife International. Because the ARCP completely encompasses it, the program area is considered part of the important bird areas. Prior studies (summarized in USFWS 2015a) have demonstrated that at least several hundred thousand breeding and nonbreeding birds use the ARCP and program area during the short arctic summer. This is an excellent summary of the importance of the Coastal Plain for birds. Regarding the analysis of direct and indirect effects to this important resource, please see general comment (2) above, as well as my previous specific comment (37) regarding Fish and Aquatic Resources. Please use the hypothetical development scenario to refine your analysis of differences in effects to birds among alternatives through each of the phases of program implementation.	Additional details on the phases of development are not available at this time, and the hypothetical development scenario is at best a rough approximation of acres of direct and indirect impacts that could result from a project. Comments otherwise accurately represent the statement in the EIS. Discussion of the schematic footprint and disturbance buffers was revised for clarity.

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16.	Withheld	Withheld	—	68965	70	Birds	40. Chapter 3; section 3.3.3 (Birds), page 3-93. Throughout this section would be a good place to refer to the hypothetical development scenario in Appendix B and explain how that scenario was used to analyze differences among alternatives regarding the four mechanisms of impact listed on page 3-92. The hypothetical development scenario contains many of the assumptions and quantitative estimates of the scope and pace of development that are needed to allow more quantitative estimates of potential effects and estimate differences in impacts among alternatives. I am bewildered by the emphasis here on effects associated with pads. More extensive effects may be associated with linear features like roads and pipelines. If you intend to focus on effects associated with pads, why doesn't your analysis of indirect effects include consideration of effects associated with noise and artificial light, which will likely have a much larger zone of influence than the 328-foot extent cited for fugitive dust, gravel spray, thermokarsting, and impoundments? Please clarify the structure and logic of your analysis of program effects on birds.	Some revisions of text have been made for clarity, including reference to Appendix B, Figure B-1. The comment mischaracterizes the supposed emphasis on pads. Most of the hypothetical scenario footprint is road. Artificial lights are unlikely to affect birds during 24-hour daylight of the entire season in which most birds are present; however, the importance of shielded lighting to reduce the collision risk is mentioned. Noise is included among effects potentially resulting in disturbance and displacement of birds. Noise is a minor influence by comparison with visual stimuli, particularly human presence or sparse and intermittent road traffic, which generally cause more severe reactions, as outlined in the EIS and references cited.
17.	Withheld	Withheld	—	68965	71	Birds	41. Chapter 3; section 3.3.3 (Birds), pages 3-94 to 3-95. Habitat impacts due to sand and gravel mining are estimated here at 320 acres. This estimated acreage, however, only accounts for the pits (pg. 3-49 to 3-50), and does not include access roads and staging/stockpiling areas. Please refine this estimate to include all impacts to bird habitats associated with sand and gravel mining.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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18.	Withheld	Withheld	—	68965	72	Birds	42. Chapter 3; section 3.3.3 (Birds), page 3-98. The detailed description of snow goose response to overflights is a welcome detail regarding an abundant species in the program area. Is similar information available about the response of snow geese to other aspects of the proposed action? Given the importance of the Coastal Plain to snow geese, consider elaborating on other potential program effects on this species. In this section on Disturbance and Displacement, please include an analysis of effects associated with noise and artificial light, especially during the production phase of program implementation. Similarly, the abandonment and reclamation phase of program implementation can involve extensive use of heavy equipment and can be a prolonged and very disruptive activity. See general comment 2 above regarding the limited attention in the draft EIS to consideration of the duration of effects. Please try to include more information, wherever possible, about the frequency and duration of program impacts to birds.	Text has been revised to attempt to better address frequency and duration of impacts and effects of noise on snow geese. The effects of light have not been studied.

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19.	Withheld	Withheld	—	68965	73	Birds	43. Chapter 3; section 3.3.3 (Birds), page 3-101. Assuming a maximum of 2,000 acres of facility footprints (excludes material sites), potential long-term loss and alteration of habitat from direct effects of gravel deposition and indirect effects of dust, thermokarsting, and impoundments under Alternative B would occur over 1 percent of the entire program area. Potential disturbance and displacement of breeding birds in tundra habitats could occur over about 2 percent of the area available for leasing. Please revise this paragraph to include consideration of the spatial area affected by all program activities, not just surface occupancy. What proportion of the program area will likely be affected if you include overflights, artificial light, noise, pipelines, ice roads, sand and gravel pits and access routes to them, seawater treatment plants, and barge infrastructure? If you made full use of estimates and assumptions in the hypothetical development scenario, a more comprehensive evaluation of effects would be possible, and this estimate could provide a more useful metric for comparing action alternatives.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines.. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.. Estimates of the area in which birds may be subject to disturbance and displacement include any effects of lights and noise. GIS analysis is not possible for ice roads or aircraft overflights, as routes are undetermined. Details regarding air traffic are provided in other sections.
20.	Withheld	Withheld	—	69211	12	Birds	It must be fully analyzed that species that utilize the project area as resident or migratory or foraging, stopover or other habitat will be directly impacted and will therefore become less able and present to utilize other habitats in other times of their life cycles, with possible eventual extinction.	Extinction is unlikely from any alternative. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action.

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21.	Peter	Stern	—	69296	31	Birds	Pages 3-94-95 discuss gravel mining effects which will be long term. Fugitive dust is discussed and having effect hundred of feed from the roads but nothing is stated about how this will be controlled or minimized. The ambiguity in language about restoration/remediation for gravel pits is not very encouraging that BLM will offer much monitoring or oversight.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition. Additional site-specific requirements may be required during NEPA analysis of site-specific proposals.
22.	Peter	Stern	—	69296	32	Birds	Page 3-95 "The actual area potentially affected would depend entirely on the configuration of roads, but these numbers indicate that indirect impacts of gravel roads and pads would affect an additional area about 7 to 8 times larger than the gravel footprint." "Potential loss and alteration of habitat from direct effects of gravel deposition and indirect effects of dust, thermokarsting, and impoundments would be long term and would occur over about 17,000 acres (2,000 acres total gravel footprint plus approximately 15,000 acres within 328 feet), or about 1 percent of the program area (1,563,500 acres). " This seems to say the area impacted will be quite large but mostly not subject to acreage development limitations. It effects not only the shorebirds being discussed but also any animals within those areas if vegetation becomes degraded.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. The 2,000-acre maximum allowable footprint refers to actual gravel laydown and does not include indirect impacts.
23.	Peter	Stern	—	69296	33	Birds	Page 3-99 " Small spills would be short term and of several acres or fewer on land. This is because they are usually contained on gravel pads and roads."... "Large spills would be more extensive, with cleanup activities lasting days to weeks, and could pose contamination risk to large numbers of molting, feeding, or migrating birds. " Oil spills under pipelines aren't mentioned nor are effects on vegetation.	Large or small spills could definitely be associated with pipelines, and pipeline spills are not excluded from the discussion. Pipeline spills are discussed on page 3-59 (Section 3.2.10, Water Resources) and page 3-61 (Section 3.2.11, Solid and Hazardous Waste). The effects on vegetation are discussed in Section 3.3.1, Vegetation and Wetlands (see page 3-72). Additional information on spills has been incorporated into bird and vegetation sections.

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24.	Curt	Leigh	—	69329	2	Birds	Predicted reductions in both density and diversity of wildlife species are discounted in the document by making comparisons to global population trends and the unbelievable and erroneous expectation that displaced wildlife will simply move into adjacent habitats. If those adjacent habitats are suitable for displaced wildlife it is likely they are already occupied, creating further displacement and intensifying inter and intra species competition (EIS p. 3-95).	No changes were made in response to this comment. On page 3-95, two statements are made regarding displacement of birds due to permanent and temporary habitat loss. The first regarding permanent loss of tundra nesting habitat states, "For some species of tundra nesting birds, habitat loss due to gravel placement redistributes individual nesting pairs to adjacent similar habitats (Troy and Carpenter 1990; Johnson et al. 2003)." Citations are provided to support this statement. The second statement regarding temporary habitat alteration that may result from screening near a single landing site during multi-annual barge activities is "Although high numbers of birds use the lagoons, they are highly mobile and likely would be able to move to adjacent similar areas if necessary." See also page 3-97 and Flint et al. 2004. Flint et al. (2004) reported that molting long-tailed ducks using lagoons in the Beaufort Sea had low but variable fidelity to sites inside barrier islands, averaging 39 percent. Sites were occupied consistently, but turnover of individuals was high as flightless ducks moved among sites. Site fidelity was not clearly affected by seismic surveys, and little evidence was found for disturbance-related displacement of individuals (Flint et al. 2004); aerial surveys did not find a difference in density of long-tailed ducks between industrial and control sites (Fischer et al. 2002).

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25.	Curt	Leigh	—	69329	3	Birds	Even the mitigation measures proposed to address those adverse impacts are mostly ineffective or only marginally effective. For example, areas with the “No Surface Occupancy” designation can still be disturbed and developed. That designation has exceptions for barge landings, docks, pipelines, roads, and stream crossings (EIS p. 3-100). Even high value near shore marine lagoon and barrier island habitats that are important for migratory birds and polar bears are subject to barge landing facilities, docks, spill response staging, storage areas and pipelines (EIS p. 2-7). In addition, an undetermined number of seawater treatment plants will be built along the coast (EIS p. B-16).	NSO, as defined, does indeed include significant exceptions; however, only one STP is proposed and only one barge landing site is proposed.
26.	Curt	Leigh	—	69329	3	Birds	In addition spill response activities including soil movement associated with containment would occur without timing or setback limitations (EIS p. 3-85).	Spill response could disturb birds and affect other resources. Disturbance is discussed on page 3-96, and spills are discussed on page 3-99, with mention of cleanup activities. See also that annual deployment and maintenance of spill response equipment may disturb nesting birds (page 3-98).
27.	Curt	Leigh	—	69329	9	Birds	Over three hundred thousand snow geese use the Coastal Plain for feeding and staging prior to their fall migration. They are highly susceptible to disturbance from aircraft up to eight miles away. Impacts from aircraft would occur during all development phases and would be extensive in geographic scope (EIS p. 3-98). No mitigation measures to eliminate or compensate for these acknowledged adverse impacts are discussed.	ROPs and lease stipulations provide indirect mitigation for other species.

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28.	Curt	Leigh	—	69329	11	Birds	The risk of oil spills during the project life exceeds 100 percent. Experience on North Slope oil fields confirms three spills larger than 100,000 gallons (EIS p.3-62). Cumulative impact analysis predicts 34 spills of approximately 16,313 gallons (EIS p. 3-65). Recent history and impact analysis confirms the significant potential for uncontrolled release of oil onto the lands and waters of the Arctic Refuge, if this oil and gas development project proceeds. Several hundred thousand breeding and non-breeding birds use the program area during the short arctic summer (EIS p. 3-85). This concentration of migratory birds from all across North America represents a very high impact risk from spilled oil. The EIS acknowledged the potential for significant adverse impacts on birds but suggests no effective prevention measure (EIS p. 3-99). In spite of the message in the Dawn dishwashing commercial on TV, survival rates for birds and marine mammals impacted by spilled oil is very low, even under perfect working conditions. The difficulty of collecting impacted individuals in arctic conditions coupled with the lack of direct access to support facilities and volunteers for washing and rehabilitation will further reduce the already low survival rates.	Text regarding spills has been revised and expanded. Spill risk cannot exceed 100 percent, but the EIS correctly indicates that spills are likely to occur and that under some scenarios large numbers of birds could be affected. Spill rates are discussed in Section 3.2.6, Petroleum Resources (page 3-38) and Section 3.2.11, Solid and Hazardous Waste. Large spills in the marine environment would be unlikely, and the EIS correctly indicates that such spills are possible in shipping lanes and near docking or STP sites. See page 3-39: "Operators would be required to prepare and implement spill prevention and control plans in compliance with applicable federal regulations." Spill prevention measures are presented in Appendix D, Section D.2.3 EPA, pages D-4 and D-5.
29.	Withheld	Withheld	—	70934	32	Birds	Page 3 - 95 in regards to a statement about the mobility of shorebirds and their ability to use adjacent areas. This ignores abundant data about preferential use of specific river deltas by migrating shorebirds. River deltas may be widely distributed but high-quality river deltas with abundant food for migrating shorebirds is concentrated in a few key areas. Ignoring this reality is a significant miscalculation.	Page 3-95 has no statement about displaced shorebirds, but EIS pages 3-96 and 3-97 do describe potential displacement of shorebirds and other birds from both terrestrial and marine habitats. Abundant data document the movements of shorebirds among multiple river delta staging areas, and the EIS accurately describes the importance of these relatively limited delta habitats.

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30.	Withheld	Withheld	On behalf of 312 scientists	71076	5	Birds	in the section on the impacts of oil spills on birds, the DEIS does not provide a single literature citation or reference, making it difficult for the public to follow the agency's logic.	References regarding oil impacts on birds have been incorporated; other details are presented in Sections 3.2.11, Solid and Hazardous Waste and 3.2.6, Petroleum Resources.
31.	Joshua	Morris	Seattle Audubon Society	72238	3	Birds	-Appendix J: -Gyrfaon misspelled as "Gyrfaon." Please correct. -Peregrine Falcon misspelled as "Peregrine Faon." Please correct. -Genus of all falcon species (Falco sp.) misspelled as "Fao." Please correct. -IUCN Red List Status not correctly listed: -Spectacled Eider should be listed as Near Threatened. Please correct. -Black-tailed Godwit should be listed as Near Threatened. Please correct. -Rufous Hummingbird should be listed as Near Threatened. Please correct.	Typos have been corrected, and listings have been double-checked.
32.	Renae	Smith	Counsel for Environmental Protection	74336	40	Birds	The proposed Leasing Program threatens to adversely impact migratory birds through habitat loss and alteration, disturbance and displacement, mortality and injury, and attraction to human activities and facilities. ²¹⁹ These threats include road construction, oil spills, water drawdown in lagoons and	The EIS statement is regarding temporary habitat alteration and disturbance/displacement that may result from screeding near a single landing site preceding multi-annual barge activities. As described in the EIS, screeding and the associated impacts would be short term in duration and limited in extent. See information regarding disturbance of molting ducks in Flint et al. 2004. See also page 3-97 where the EIS states, "Flint et al. (2004) reported that molting long-tailed ducks using lagoons in the Beaufort Sea had low but variable fidelity to sites inside barrier islands, averaging 39 percent. Sites were occupied consistently, but turnover of individuals was high as flightless ducks moved among sites. Site fidelity was not clearly affected by seismic surveys and little evidence was found for disturbance-related displacement of individuals (Flint et al. 2004); aerial surveys did not find a difference in density of long-tailed ducks between industrial and control sites (Fischer et al. 2002)."

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33.	Renae	Smith	Counsel for Environmental Protection	74336	41	Birds	lakes important for nesting and molting, climate change, vegetation damage, transportation, construction, air traffic, and many other threats that will reduce or alter previously untouched migratory bird habitat, impact prey, and contribute to bird injury and mortality. ²²⁰ Oil spills in particular could lead to high mortality, the loss of habitat, and long-term impacts on the health of migratory bird populations. Despite these potentially devastating impacts, the DEIS contains mostly generic, broad, and unsupported statements about the impacts of action alternatives on migratory birds. ²²¹ For example, in discussing habitat loss and alteration impacts, the DEIS makes the unsupported statement that in response to habitat alterations caused by screening for barge access that "would create a sediment plume that could disport feeding by non-breeding, post-breeding, and staging birds" the high number of birds using the area "are highly mobile and likely would be able to move to adjacent similar areas if necessary." ²²² The DEIS does not provide support for any of these statements or otherwise explain the availability and quality of other adjacent similar areas, how the disruption may impact birds at different life-cycle stages, or whether birds are expected to return to the disrupted habitat after disruption ceases.	The BLM has revised the text for clarity. The EIS statement is regarding temporary habitat alteration and disturbance/displacement that may result from screening near a single landing site preceding multi-annual barge activities. As described in the EIS, screening and associated impacts would be short term in duration and limited in extent. See information regarding disturbance of molting ducks in Flint et al. 2004. See also page 3-97 where the EIS states: "Flint et al. (2004) reported that molting long-tailed ducks using lagoons in the Beaufort Sea had low but variable fidelity to sites inside barrier islands, averaging 39 percent. Sites were occupied consistently, but turnover of individuals was high as flightless ducks moved among sites. Site fidelity was not clearly affected by seismic surveys and little evidence was found for disturbance-related displacement of individuals (Flint et al. 2004); aerial surveys did not find a difference in density of long-tailed ducks between industrial and control sites (Fischer et al. 2002)."

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34.	Renae	Smith	Counsel for Environmental Protection	74336	42	Birds	the DEIS notes that “[p]otential impacts of disturbance and displacement by summertime construction and operations would be long term and may affect nesting success for some birds near facilities; however, they are unlikely to affect regional or global population sizes or nesting densities of breeding birds.” ²²³ But, the DEIS provides no support for this conclusion. ²²⁴ Common sense suggests the opposite: that long-term disruption of nesting success for bird species likely would contribute to declines in nesting densities and/or population sizes. As with other topics in the DEIS, BLM addresses this issue not with data, science, or even common sense, but instead assumes that no problem exists.	No bird species has a nesting range restricted to the program area, and the program area is a relatively small proportion of the breeding range for all species. Effects on a scale that would affect global populations are unlikely. No such declines have been attributed to much denser industrial development in the Prudhoe Bay and adjacent fields. See J. C. Truett and S. R. Johnson, eds. 2000. <i>The Natural History of an Arctic Oil Field: Development and the Biota</i> . Academic Press, San Diego, California.
35.	Renae	Smith	Counsel for Environmental Protection	74336	43	Birds	additional analysis of the extent of these population consequences or how they may impact regional or global population sizes. Similarly, although the DEIS recognizes that long-tailed ducks “make up about 80 percent of the birds in the nearshore waters of the Beaufort Sea” and are “the predominant bird in the lagoon system,” the DEIS does not meaningfully analyze how this concentration of the long-tailed duck population might intensify impacts from disturbance and displacement or how these impacts in combination with habitat loss, mortality, injury, and a changing climate may impact population health. ²²⁶	Text has been revised for clarity. Population-level impacts on long-tailed ducks are not anticipated to result from the activities described for the program area in the EIS. Discussion of climate change and cumulative effects has been revised.

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36.	Renae	Smith	Counsel for Environmental Protection	74336	43	Birds	Where the DEIS does provide bird-specific information, it merely notes the impact without drawing any meaningful conclusions about the significance of the impact to bird populations and long-term health. For example, the DEIS notes that lower water levels from drawdowns "could eliminate important nesting sites on islands and peninsulas and may reduce fish prey, with particular impacts on breeding Pacific and red-throated loons" that would include "potential population consequences for Pacific, red-throated, and yellow-billed loons."225 But, despite recognizing that the impact from drawdowns could be significant, the DEIS provides no	Drawdown lakes have not been identified, so no further or quantitative analysis is possible.

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37.	Renae	Smith	Counsel for Environmental Protection	74336	45	Birds	the analysis of Alternative D repeatedly notes the potential benefits to birds from non-surface occupancy restrictions or timing limitations, but there is no analysis of the extent of the potential benefits or how these benefits would interact with other impacts. ²³² In addition, the DEIS misleadingly calculates the level of long-term loss and alteration of habitat and extent of disturbance and displacement as a percentage total of the overall area being leased. As a result, even though Alternative D is the most protective alternative considered in the DEIS, the DEIS misleadingly states that its percentage of long-term loss and alteration of habitat will be approximately 1.6 percent, compared with 1 percent for Alternatives B and C, even though Alternatives B and C will result in larger acreage impacts. Similarly, the DEIS calculates that disturbance and displacement under Alternative D could total 3 percent of the area available for leasing as compared to 2 percent under Alternatives B and C. ²³³ These misleading calculations erroneously suggest that Alternatives B and C may be more protective than Alternative D, when the reverse is true.	The quantitative analysis of disturbance buffers has been revised to clarify that the 2,000-acre project footprint would have similar areas affected by habitat alteration and disturbance in all alternatives.
38.	Renae	Smith	Counsel for Environmental Protection	74336	49	Birds	reasonably foreseeable oil and gas development impacts would be common to the impacts described for development pursuant to the program area lease sales" and that these impacts would likely increase in occurrence and intensity and affect birds in both terrestrial and marine environments. ²³⁸ NEPA demands more than this cursory analysis.	The Draft EIS provides an adequate analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Renae	Smith	Counsel for Environmental Protection	74336	49	Birds	The DEIS's analysis of cumulative impacts on migratory birds is also deficient. Although the DEIS identifies seismic exploration surveys as a reasonably foreseeable action, ²³⁵ it does not meaningfully address the impacts of this testing on migratory birds in its cumulative impacts analysis. ²³⁶ The cumulative impacts analysis also fails to discuss other past, present, and reasonably foreseeable future oil and gas development projects in the area and how those other projects would contribute to impacts on migratory birds. ²³⁷ Instead, the DEIS merely states that	Additional information regarding the potential impacts of seismic exploration has been incorporated here and in sections on soil, permafrost, water resources, and vegetation.
40.	Renae	Smith	Counsel for Environmental Protection	74336	50	Birds	Decision to ensure the least possible impacts on migratory birds. BLM should also require ongoing monitoring to analyze the ongoing impacts of the Leasing Program on migratory birds.	ROPs (25–27 and 30–32) and Stipulations 4 and 9 are in place to minimize negative effects on birds. There are additional measures that could be applied, including monitoring, to further minimize impacts. Some will be applied at the project-specific level

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Renae	Smith	Counsel for Environmental Protection	74336	50	Birds	The DEIS also fails to incorporate any meaningful mitigation measures to protect migratory birds from the acknowledged threats of the proposed Leasing Program. A DEIS should include a discussion of “[m]eans to mitigate adverse environmental impacts.”²⁴⁰ “Mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.”²⁴¹ Here, however, the DEIS recognizes potential methods for minimizing impacts but fails to identify any of these as mitigation measures. For example, although the DEIS notes that impacts from gravel and dust fallout “would be minimized by using the shortest road routes and smallest pads and by placing gravel in uplands and well-drained habitats,” the DEIS does not identify these measures for mitigation.²⁴² Similarly, although the DEIS recognizes that future disturbance and displacement could affect nesting within 0.8 miles of active roads and 3.1 miles of oilfield facilities, the DEIS does not require any mitigation to reduce this disturbance and displacement.²⁴³ Further, the DEIS notes that reduced speed limits and driver awareness of seasonal birds could reduce bird-vehicle collisions, but again the DEIS does not require this as a mitigation measure. In addition, the DEIS notes the importance of “[s]pill containment at strategic points on waterways,” but does not include any specific mitigation measures to ensure that the spill prevention and response contingency plans under the proposed Leasing Program incorporate measures to ensure protections for migratory birds. At the very least, BLM should incorporate these and other meaningful mitigation measures into the Leasing Program Record of	ROPs (25–27 and 30–32) and Stipulations 4 and 9 are in place to minimize negative effects on birds. There are additional measures that could be applied to further minimize impacts. Some will be applied at the project-specific level.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Eric	Walsh	Government of Canada	74346	48	Birds	The EIS does not quantify how cumulative effects are likely to impact populations. While additional harvest pressure on overabundant species (Lesser Snow Goose) populations could potentially have some benefits (e.g. reducing overabundant populations). The cumulative effect of additional development on other species that may be at risk or undergoing population declines (shorebirds) or that congregate in large numbers (Common Eider, King Eider) off shore are not described.	Additional discussion of cumulative effects has been added. Offshore impacts are anticipated to be minor, comprising mainly temporary disturbance and displacement near the STP and landing facilities. Population-level effects are not anticipated to result from these activities.
43.	Eric	Walsh	Government of Canada	74346	49	Birds	The EIS does not delineate or rank risks of potential routes for barge traffic along shipping routes in the Beaufort Sea. Barge traffic increases the risk of accidental spills of both marine fuel (diesel) and extracted oil/gas products from the lease production sites for key species that rely almost exclusively on marine habitat during migration/molting and wintering (e.g. Common Eider, King Eider, Stellar's Eider, Spectacled Eider, Brant).	The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario.
44.	Withheld	Withheld	—	75145	6	Birds	The BLM analysis of effects on birds is inadequate and contains large loopholes that would allow oil and gas activities to move forward regardless of harm to birds. A thorough analysis of direct and cumulative impacts on world bird populations that spend their summer on the Coastal Plain is necessary to determine the environmental impacts of oil and gas leasing in the Arctic National Wildlife Refuge.	Additional discussion of cumulative effects has been added. No bird species has a nesting range restricted to the program area, and there is no world population that spends the summer in the program area. Oil development activities are not anticipated to result in population-level impacts on any bird species.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Chandra	Turner	Inuvialuit Game Council	75904	14	Birds	We have read the section of the DEIS dealing with birds (3-84 - 3-103). At various points this section acknowledges that some of the populations are shared populations and also that some populations are important subsistence resources for North Slope residents (e.g. Common Eider and King Eider at 3-87). However, this section of the DEIS does not reference the Migratory Birds Convention or Protocol or the related North American Waterfowl Management Plan. Nor does the DEIS offer a systematic account of shared populations or even identify which populations fall within the terms of the Convention and Protocol. Nor does it offer a systematic account of shared populations that are important for subsistence purposes. Nor does it reference the interests of Canadian Indigenous communities in these resources.	The Migratory Bird Treaty Act is described on page D-4. Additional mention has been added to the avian section with reference to the North American Waterfowl Management Plan. Subsistence is discussed in Section 3.4.3. Virtually all birds found in the planning area are migratory, share populations with other countries and often other continents, and are protected similarly by the Migratory Bird Treaty Act.
46.	Withheld	Withheld	—	77891	4	Birds	The Arctic Refuge Coastal Plain is also an essential nesting, foraging, and migratory stopover for millions of birds each year. The BLM analysis of effects on birds contains large loopholes that would allow oil and gas activities to move forward regardless of harm to birds. A thorough analysis of direct and cumulative impacts on world bird populations that spend their summer on the Coastal Plain is necessary to determine the environmental impacts of oil and gas leasing in the Arctic National Wildlife Refuge.	Additional discussion of cumulative effects has been added. No bird species has a nesting range restricted to the program area. There is no world population that spends the summer in the program area. Oil development activities are not anticipated to result in population-level impacts on any bird species.

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47.	Natalie	Dawson	—	81061	2	Birds	he big takeaway there is that a ton of bird surveys & monitoring are needed before even being able to adequately analyze impacts from an oil & gas leasing program. The memo explains that the data gaps are glaring for where, when, and which birds are using the Refuge Coastal Plain for various aspects of their life histories. That big multi-faceted, multi-species gap is then carried forward to say that such information is needed "Before an assessment of potential impacts of development can be conducted..." The memo then articulates a few specific knowledge gaps on impacts from oil & gas on birds, but with that broader caveat that these are only the "most apparent needs" given that they don't even have the baseline data needed to address the very question of oil & gas impacts	No revisions were made in response to this comment. Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data.
48.	Todd	Campbell	Conservation Biology course	81185	7	Birds	Although this alternative has been determined to be the best option, we feel uninformed as to the specific impacts this project would have on the birds in this wildlife refuge and cannot yet endorse opening ANWR for lease to oil and gas exploration. This refuge has been noted by the Audubon society as "holding the most globally-significant Important Bird Areas of any U.S. state". That this EIS lacks sufficient information about this notable refuge for birds shows a lack of concern for the wildlife present in this area. Erwin, R.M. 1989. Responses to Human Intruders by Birds Nesting in Colonies: Experimental Results and Management Guidelines. Colonial Waterbirds, 12(1): 104-108.	No revisions were made in response to this comment. Erwin 1989 is an investigation of disturbance in nesting colonies of terns and skimmers, and there are few similar situations of colonial nesting birds in the planning area. This reference was not incorporated.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49.	Withheld	Withheld	Alaska Wilderness League	81382	3	Birds	The Migratory Bird Treaty Act (MBTA), which Congress enacted to implement a 1916 convention with Canada to protect migratory birds, is one of many examples. The MBTA protects over 200 species of migratory birds found on the Coastal Plain. Any oil and gas activities that take or kill migratory birds on the Coastal Plain without authorization would violate the MBTA. The United States is also obligated to three other bilateral conventions with Mexico, Japan, and Russia to protect migratory birds. BLM has, to date, failed to ensure compliance with these, and other, international treaties and agreements. The BLM must revise the draft EIS and address how it will ensure compliance for an oil and gas program on the Coastal Plain with these international treaties and agreements.	The BLM requires operators to comply with all applicable federal, state, and local laws. Compliance with the MBTA only requires that no birds are deliberately killed and no nests deliberately destroyed, but there are no penalties for incidental take. None of the proposed actions include the deliberate destruction of birds or nests.
50.	Deanna	Noel	Defenders Of Wildlife	82837	2	Birds	Presently, population sizes and the distribution of nesting shorebirds are unknown. At the very least, more surveys should be carried out before determining that the area is appropriate for development and will not cause irreparable harm to avian species in the balance.	No revisions were made in response to this comment. Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. The existing data are summarized, and impacts on wildlife and habitat are assessed from each alternative. Additional studies will likely occur, and more detailed minimization measures should be incorporated into future analyses.
51.	Maryanne	Adams	Onondaga Audubon	82837	2	Birds	Presently, population sizes and the distribution of nesting shorebirds are unknown. At the very least, more surveys should be carried out before determining that the area is appropriate for development and will not cause irreparable harm to avian species in the balance.	No revisions were made in response to this comment. Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. The existing data are summarized, and impacts on wildlife and habitat are assessed from each alternative. Additional studies will likely occur, and more detailed minimization measures should be incorporated into future analyses.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Deanna	Noel	Defenders Of Wildlife	82837	3	Birds	Because they nest on the ground in the open, all shorebirds are particularly vulnerable to the predators that are drawn to manmade disturbance. In order to drill for oil, roads, buildings, and industrial facilities would need to be built. This construction would fragment and degrade the habitat so much that nests would be abandoned or perhaps never even built.	No revisions were made in response to this comment. All nesting birds in the planning area nest on the ground and are similarly vulnerable. Effects on habitats and behavior of birds are accurately described, and potential impacts on nesting birds are recognized. However, population-level effects on nesting birds have not been noted in previous development areas on the North Slope and are not anticipated. See J. C. Truett and S. R. Johnson, eds. 2000. The Natural History of an Arctic Oil Field: Development and the Biota. Academic Press, San Diego, California.
53.	Maryanne	Adams	Onondaga Audubon	82837	3	Birds	Species that would be especially impacted by oil drilling on the Coastal Plain are the shorebirds that use this area for breeding. Surveys conducted in 2002 and 2004 indicate that 14 species of breeding shorebirds (more than 230,000 individuals) were present on the Coastal Plain (The Condor 109(1):1-14. 2007).	The citation for Brown et al. 2007 from Condor 109 has been cited correctly here and in the EIS.
54.	Deanna	Noel	Defenders Of Wildlife	82837	3	Birds	Species that would be especially impacted by oil drilling on the Coastal Plain are the shorebirds that use this area for breeding. Surveys conducted in 2002 and 2004 indicate that 14 species of breeding shorebirds (more than 230,000 individuals) were present on the Coastal Plain (The Condor 109(1):1-14. 2007).	The citation for Brown et al. 2007 from Condor 109 has been cited correctly here and in the EIS.
55.	Withheld	Withheld	—	82848	4	Birds	Additionally the EIS notes repeatedly that the proposed leasing regions are critical habitat for migratory birds, but that very few details are known about population numbers and habitat usage of birds in the proposed leasing area. Treatment of landbirds in the draft EIS is especially sparse. Without more information, consideration of potential impacts of leasing activities on birds is insufficient.	Detailed data on many species do not exist; however, the BLM prepared the EIS with the best available data. Additional studies will likely occur, and more detailed minimization measures should be incorporated into future analyses.

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56.	Withheld	Withheld	—	83335	3	Birds	The DEIS minimizes the impact to millions of birds, from nearly 200 species, which come from every state and continent to breed there. At the very least, constructing roads and drilling pads will disturb the wildness of the Coastal Plain and interfere with the life cycles of migrating birds. We need to be exemplary stewards of this vast, rare ecosystem. Drilling of any kind will compromise its integrity as an intact ecosystem, rare on Earth	The EIS attempts to present an accurate assessment of the risks to birds.
57.	Byron	Sansom	—	83569	2	Birds	The BLM analysis of effects on birds is inadequate and contains large loopholes that would allow oil and gas activities to move forward regardless of harm to birds	The EIS attempts to present an accurate assessment of the risks to birds.
58.	Terry	Reichardt	—	90939	5	Birds	due to limited data on migratory bird life in this part of the coastal plain, there remain many unknowns, especially the size of many of the projected impacts. The legislation allows for four years before leases must be sold. Taking the time available would allow studies to be done to answer more of these unknowns. Data leading to projections of impacts from surface disturbance on migratory bird nesting is extremely sparse or lacking.	The EIS attempts to present an accurate assessment of the risks to birds.
59.	Withheld	Withheld	—	90947	1	Birds	the BLM analysis of effects on birds is inadequate and contains large loopholes that would allow oil and gas activities to move forward regardless of harm to birds. A thorough analysis of direct and cumulative impacts on world bird populations that spend their summer on the Coastal Plain is necessary to determine the environmental impacts of oil and gas leasing in the Arctic National Wildlife Refuge.	Additional discussion of cumulative effects has been added. No bird species has a nesting range restricted to the program area, and there is no world population that spends the summer in the program area. Oil development activities are not anticipated to result in population-level impacts on any bird species.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Elizabeth	Ballard	—	90951	1	Birds	More than 150 species of birds have been documented on the Coastal Plain, many of which find vital habitat for foraging, nesting, migratory staging, and overwintering. ¹ The Coastal Plain of the Arctic Refuge lies within a designated Important Bird Area that is globally important for American Golden-plover, Buff-breasted Sandpiper, and Pectoral Sandpiper; continentally important for Snow Goose, Red Phalarope, Whimbrel, and Dunlin; and important at a state level for Golden Eagle, Red-necked Phalarope, Red-throated Loon, Ruddy Turnstone, Semipalmated Plover, Semipalmated Sandpiper, and Stilt Sandpiper. ² Yet the DEIS downplays the importance of the Coastal Plain to birds, misses important information, and conducts a poor analysis of the impacts that oil and gas development will have on birds. Moreover, the DEIS section on birds is extremely poorly organized, and presents information specific to certain birds directly alongside information on birds in general, forcing the public to try to piece together a narrative of the baseline and impacts.	The EIS attempts to present an accurate assessment of the risks to birds and does not downplay the importance of the project area to birds.
61.	Elizabeth	Ballard	—	90951	2	Birds	The DEIS does not provide adequate descriptions and baselines for the birds found within the project area. Throughout the DEIS the agency appears to downplay the importance of birds with the status “uncommon.”	The EIS attempts to present an accurate assessment of the risks to birds and does not downplay the importance of the project area to birds.
62.	Elizabeth	Ballard	—	90951	3	Birds	For example, the DEIS notes that “[w]aterbirds arrive in late May and June and begin nesting from late May through June,” ³ but does not provide any analysis of changes in phenology. Broadly across the bird section, the DEIS lacks sufficient description and information on potential changes in phenology and the potential for resulting impacts	Climate change and phenology are discussed in the subsection entitled climate change and not broadly across the bird section (similar to other resources). Please see the specific discussion there, in which phenological changes are discussed. Additional discussion of climate change has been incorporated in that section and under cumulative effects.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Elizabeth	Ballard	—	90951	4	Birds	The DEIS also fails to accurately describe the extent of impact to bird habitat. The 2000 acre “limit” that allows reclamation to exceed the cap will cause more than 2000 acres of impacts to birds. The DEIS explains that the agency would allow the 2000 acre “cap” to be exceeded if disturbed acres are “reclaimed.” ⁴ But shorebirds and passerines do not use reclaimed acres in the same way they use non-disturbed areas. ⁵ Furthermore, the DEIS itself notes that “[h]abitat alteration caused by fugitive dust, thermokarsting, and water impoundments intensifies with time,” ⁶ without explaining how remediation will undo these indirect impacts. Therefore, the DEIS must explain that the impacts to birds would go above and beyond the 2000 acres, and must address how this impact exceeding 2000 acres conforms with the law.	Indirect impacts and disturbance will exceed the 2,000 acres of allowed direct habitat loss. Text has been added regarding altered bird use of reclaimed disturbed habitats. See Section 3.2.10, Water Resources: “Reclamation has not been proven for gravel removal in the arctic environment once operations have ceased.” Additional information on reclamation has been incorporated into the vegetation section.
64.	Elizabeth	Ballard	—	90951	5	Birds	The DEIS fails to adequately describe and consider migratory birds. Migratory birds in the Arctic can face problems finding migratory and wintering habitat outside of the project area. The impacts from beyond the project area can in some cases be more severe than impacts in the Arctic, ⁷ and must be considered in the context of impacts within breeding ranges. For example, a number of shorebird species that breed in the 1002 Area are long distance migrants that are experiencing impacts along their migratory pathway and merit special consideration and analysis. ⁸ Pacific Brant are also experiencing changes to their wintering habitats, which may be changing nesting and survival in Brant on their Arctic breeding grounds. ⁹ The DEIS must consider these transboundary effects in conjunction with impacts from oil and gas activity.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Elizabeth	Ballard	—	90951	7	Birds	The DEIS analysis of oil spill impacts on birds is inadequate, incomplete, and lacks any reference to studies or articles. First, the DEIS ignores relevant spill data. Petroleum Reserve Alaska. The agency must amend its oil spill table to include oil spill data from these areas. When the DEIS presents these more relevant data, it will become more apparent that the DEIS's supposition that spills of 10,000 gallons are extremely rare, 10 is wrong. There have been more than 16 spills of over 10,000 gallons of various toxic materials in the last 19 years, including a	See Section 3.2.11 and data on spills presented in that section. Revisions have been made to the bird section to clarify the discussion of spill impacts.
66.	Elizabeth	Ballard	—	90951	8	Birds	The DEIS lacks any analysis of acoustic impacts on birds. Noise from all stages of industrial activity can impact birds including causing stress, fright or flight, avoidance, changes in behavioral habits like nesting and foraging, changes in nesting success, modified vocalizations, or interference with the ability to hear conspecifics or predators. ¹¹ The DEIS should catalog the existing noise in the planning area, explain the changes in noise that will occur with the development of an oil and gas program, describe impacts that will occur for birds, and provide a method for addressing and monitoring this issue.	The acoustic environment is described in Section 3.2.3. Noise is a factor included in discussion of disturbance and displacement, and specific mention has been added. See ROP 32, which prohibits activities including high noise near known eider nests.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Elizabeth	Ballard	—	90951	9	Birds	The DEIS does not contain an adequate cumulative impacts analysis for birds. The sections below describe inadequate cumulative impacts analysis for specific birds and guilds, but more generally the "Cumulative Impacts" section within the "Birds" section of the DEIS12 is wholly inadequate. This small section essentially consists of an incomplete list of the individual indirect or direct impacts. The list includes increased predation, terrestrial transportation activities, boat and air traffic disturbance, subsistence harvest of birds, recreation, air-based sightseeing, adventure cruise ships, community development projects. But the list of impacts misses impacts like seismic activity's effects to hydrology and oil spills; the list also completely misses impacts from beyond the project area including melting sea ice; marine boat traffic impacts to marinebirds along the marine traffic route; and impacts to migratory birds in other parts of their life history, at stop-over and wintering habitat. The list is also entirely too vague, and does not expand upon the impacts of barge and boat traffic to mention the effects from screeding.	The cumulative effects section has been revised to provide more information. Effects of climate change are discussed separately under that heading. Increased risk of spills, including the marine transport route, was incorporated, as suggested. Transboundary impacts have been incorporated as a separate section. Screeding is covered as an indirect effect of the leasing action; it would not be a cumulative effect unless additional screeding were conducted for other hypothetical development scenario actions. Although not mentioned specifically, screeding would be included among potential actions associated with community development projects, such as improvement of ports, which are listed in the hypothetical development scenario.
68.	Elizabeth	Ballard	—	90951	10	Birds	In addition to missing many of the individual impacts that can accumulate or become exacerbated, the cumulative impacts section simply does not analyze these impacts as accumulating or exacerbating. The section both misses habitat loss from infrastructure as an impact and furthermore entirely lacks any accounting of the accumulating infrastructure on the North Slope, including activity in land owned by private corporations or by the State of Alaska, and activity in the National Petroleum Reserve-Alaska in the western Arctic.	The cumulative effects section has been revised to provide more information, including habitat loss and alteration and potential development on non-BLM-managed lands. The hypothetical development scenario includes development projects in the NPR-A.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Elizabeth	Ballard	—	90951	11	Birds	Finally, this cumulative impacts section only mentions climate change in a single sentence: "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential cumulative impacts." ¹³ This completely misses the many and intertwining cumulative impacts that will stem from climate change, including exacerbated habitat loss, changes in phenology, invasive species, and changes to hydrology, erosion rates, and other physiological aspects of Arctic ecosystems. Earlier parts of the birds section make the same error. For example, following a confusing description of how gravel infrastructure could directly and indirectly reduce habitat for spectacled eiders (and the DEIS appears to expand these impacts to all birds), the DEIS mentions the same sentence found in the later section, that "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential cumulative impacts." ¹⁴ But again, this conclusory sentence does not expand on how climate change could modify the assumptions on how gravel infrastructure may impact bird habitat. In sections below, the inadequacies of the cumulative impacts analysis for specific bird species and guilds are described in more detail.	The organization of the EIS places climate change in a separate discussion from cumulative effects. Please see that section for treatment of climate change. All factors mentioned in the comment are discussed in that section (habitat loss, phenology, changing ranges/invasive bird species, hydrology, and erosion). The comment is correct that the buffer developed for eiders was used as a conservative estimate for all birds, recognizing that each species differs. The cumulative effects section has been revised to provide more information.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Elizabeth	Ballard	—	90951	12	Birds	The analysis of the impacts to cliff-nesting raptors is inadequate. The DEIS describes development activity that would remove gravel from rivers ¹⁵ and explains the action alternatives would remove gravel and sand from “alluvial deposits of larger rivers” and “streams and topographic high points.” ¹⁶ Within Appendix A, the reasonably foreseeable development scenario includes a section on gravel mines but does not provide more specificity, noting that gravel pits will likely occur near the facilities they are supplying. ¹⁷ But the section on birds does not use this information to explain where gravel mining may overlap with cliff-nesting raptor habitat, thus limiting the analysis on the extent of this impact. The DEIS therefore does not specify where removal of gravel from rivers will occur under the reasonably foreseeable development scenario and under the different alternatives, and therefore does not adequately assess the impact to cliff-nesting raptors	Locations of gravel mines are not known but will be determined during the permitting process for any proposed development project. Potential impacts on raptors will be assessed at that time.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Elizabeth	Ballard	—	90951	17	Birds	The DEIS fails to analyze where and how winter activity could impact American Dippers or other winter birds in the program area. The DEIS notes that winter birds remain in the program area year-round, including “dippers near open running water.”²³ Appendix J indicates that wintering birds are not rare (American Dippers are uncommon, meaning regular but not always observed; Willow Ptarmigan are uncommon; and Rock Ptarmigan are common).²⁴ Later, the DEIS mentions that “[t]raffic and machinery related to winter construction could cause disturbance, behavior alterations, and displacement to resident wintering birds.”²⁵ But the DEIS does not go on to mention American Dippers or other wintering birds in the short section on “Landbirds.”²⁶ There are no lease stipulations or ROPs related to the issue of winter activity impacts on American Dippers or other overwintering birds.²⁷ Without a basis for its conclusions, the DEIS simply states that development activity would “affect few species and low numbers of year-round residents,”²⁸ and that “only small numbers of only a few bird species are resident during winter, and none are breeding. Winter construction therefore would potentially affect small numbers of non-breeding birds during the construction phase of a development project.”²⁹ This constitutes insufficient analysis of impacts to wintering birds from industrial winter activity.	Specific mention of dippers has been added to the section on year-round resident landbirds; however, notwithstanding the presence of dippers, the EIS is accurate in stating that small numbers of birds would be affected by winter activities (see p. 3-96).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	Elizabeth	Ballard	—	90951	18	Birds	The DEIS does not adequately analyze or mitigate the impacts to shorebird habitat from winter work and the subsequent shifts in hydrology. The DEIS briefly notes that winter activities, such as seismic machinery and ice roads, can harm vegetation and change spring runoff, and that more damage occurs in well-drained areas of the tundra, which are areas favored by some shorebirds like Whimbrel and American Golden-plover.³⁰ But the DEIS never takes the next step to make the connection to shorebirds or their natural history. Nor does the DEIS connect the dots to explain that most of the high oil potential area in the 1002 is comprised of that habitat type. While the Canning River and Sadlerochit River have patchy wetlands, the rest of the high oil potential area is comprised of well-drained tundra, which provides habitat for shorebirds like American Golden-plover. Moreover, Lease Stipulations 1, 4, and 9,³¹ which involve purported protections to shorebirds and their habitat do not apply to winter work,³² when seismic activity and ice roads impact vegetation and hydrology.	Additional text regarding the potential impacts of seismic exploration has been incorporated here and in sections on soil, permafrost, water resources, and vegetation. The EIS does acknowledge the dominance of well-drained tundra and that habitat loss and alteration will occur and will affect shorebirds and other species in drier habitats. See Habitat Loss and Alteration, p. 3-95.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Elizabeth	Ballard	—	90951	20	Birds	Furthermore, the cumulative impacts analysis for shorebirds does not connect climate and infrastructure. The DEIS mentions climate-related changes that could affect shorebirds, saying that “[i]ncreases in shrubs and trees have been documented (Sturm et al. 2001b; Tape et al. 2006) and are expected to continue with increasing summer temperatures. . . . tundra nesting birds (. . . shorebirds. . .) may decline.” ³⁴ But the DEIS does not link this change to the potential hydrological changes from winter oil and gas activities. Nor does the DEIS connect the climate-induced change, or the winter-activity hydrological changes to the water drawdown, which “may affect shorelines, degrading habitat for a variety of waterbirds and shorebirds.” ³⁵ The DEIS must not only address individual impacts to shorebirds and other species, but must analyze these impacts collectively as cumulative effects, that could add or exacerbate the individual impacts.	The cumulative effects section has been revised to attempt to better address interactions between shrubification and drying on bird habitats.
74.	Elizabeth	Ballard	—	90951	21	Birds	The DEIS does not adequately examine the impacts from air traffic to snow geese and other nonnesting birds. Non-nesting birds are sensitive to aircraft overflights, from a distance of 1.2 to 2.5 miles from the aircraft pathway. ³⁶ But due to the narrowness of the coastal plain, the buffer of 2.5 miles could cover a large percentage of the total area. The DEIS should depict this impact spatially. Without an acknowledgement and depiction of how far-reaching air traffic impacts will be on the narrow coastal plain, the DEIS has not fully grappled with the extent to which aircraft could impact non-nesting birds.	Spatial analysis of air traffic is not possible because facility locations are unknown and flight paths are, therefore, unknown.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	Elizabeth	Ballard	—	90951	25	Birds	Second, the DEIS further downplays the impacts of screeding on birds and their food web. The DEIS notes that screeding will cause a "sediment plume that could disrupt feeding by nonbreeding, post-breeding, and staging birds." ⁴¹ But the DEIS dismisses this as "short-term" and does not acknowledge that a sediment plume could present long-term impact of disrupting the food web.	Text on screeding has been revised to indicate that barging and screeding would occur annually. The EIS correctly describes that screeding would occur during short periods and only near a landing location and is, therefore, short duration and localized. The activities described do not suggest a long-term disruption of food webs.
76.	Elizabeth	Ballard	—	90951	28	Birds	One potential area is from deep-water lakes, but this poses a risk to the fish species found in these lakes, which in turn could have "potential population consequences for loons, primarily for Pacific and red-throated loons". ⁴² But the DEIS draws this conclusion without any further explanation of the status of loon populations in the project area, without describing which deepwater lakes may be at risk, and without noting which species of fish may be impacted and whether these fish species are in fact the forage species needed by loons. This analysis is wholly inadequate.	Specific drawdown lakes have not been identified, and the fish community composition in most lakes is unknown. The EIS was revised to clarify that RTLO do not feed in their nesting lakes.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	Elizabeth	Ballard	—	90951	30	Birds	The DEIS briefly notes that climate change could increase shrub- and tree-nesting passerines, ⁴⁵ but does not provide any reference. ⁴⁶ The DEIS also notes in passing that vegetation damage from winter work is most severe in areas that support higher densities of passerines, ⁴⁷ and that passerines experience decreased nest survival within 3.1 miles of oilfield facilities, ⁴⁸ but neglects to connect these individual impacts to the cumulative impacts of a changing habitat and climate change. Instead the DEIS only concludes that because Alternative C has larger setbacks, it will be more protective of passerines, ⁴⁹ lacking any further analysis of how the development scenario and the different alternatives will impact passerines in different ways and at different levels.	Additional discussions of seismic exploration, climate change, and cumulative effects have been incorporated. Decreased nest survival within 3.1 miles of oil field facilities was detectable as accurately reported by the EIS (and correctly attributed to Liebezeit et al. 2009). That magnitude of effect is not anticipated to result in population-level changes; it was attributed to changes in predator abundance.
78.	Elizabeth	Ballard	—	90951	31	Birds	The DEIS contains almost no analysis on impacts to seabirds. The DEIS notes that "low levels of disturbance and displacement of seabirds could occur along the marine vessel route between the ARCP and Dutch Harbor, Alaska." ⁵⁰ But the analysis on impacts to seabirds in the coastal areas is focused on Long-tailed Ducks, rather than on seabirds in the coastal areas, ⁵¹ and the DEIS does not contain any additional analysis of the impacts to seabirds from increased vessel traffic. ⁵²	Additional discussion of birds on the marine route has been incorporated. The EIS states that of seven seabird species that occur offshore of the ARCP, five are accidental/rare visitors (shearwaters, fulmars, and most alcids). Only black guillemot (rare breeder on barrier islands) and thick-billed murre (rare migrant) occur regularly. The EIS correctly focuses on molting ducks versus seabirds because these waterfowl occur in large numbers, while seabirds are rare. Note, however, that only minor impacts are anticipated to result; this includes all the visitors and the two species of seabird that occur regularly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	Withheld	Withheld	—	92034	7	Birds	Birds: The Arctic Refuge Coastal Plain is an essential nesting, foraging, and migratory stopover for millions of birds each year. Over 200 species of birds from every US state and six continents nest on the Refuge Coastal Plain. The BLM analysis of effects on birds is inadequate and contains large loopholes that would allow oil and gas activities to move forward regardless of harm to birds. A thorough analysis of direct and cumulative impacts on world bird populations that spend their summer on the Coastal Plain is necessary to determine the environmental impacts of oil and gas leasing in the Arctic National Wildlife Refuge.	An additional discussion of cumulative effects has been added. No bird species has a nesting range restricted to the program area. There is no world population that spends the summer in the program area. Oil development activities are not anticipated to result in population-level impacts on any bird species.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Veronica	Estelle	—	94060	1	Birds	As a PhD ecologist with field experience in the Prudhoe Bay Oil Field, the Kuparuk Oil Field and the National Petroleum Reserve researching avian populations and their use of habitat, I request that population level and demographic studies be conducted on all waterfowl, shorebird, and passerine avian species on any leased and adjacent non-leased lands (for comparison throughout the study period), as well as studies on habitat use and availability by these species. I also request that population and demographic studies be conducted on predator species, particularly population studies that evaluate numbers, distribution and concentration of predators who may take avian species in leased and unleased areas, pre- and post-development. It is well documented that development leads to an increase in fox, ravens, crows, and other predators of avian species in oil fields. All studies should be conducted prior to lease, prior to development, during development and after development. Studies should be contracted by reputable consulting firms or academics with Arctic experience and who have no financial ties to the oil industry. The results of these studies, as well as the original data, should be publicly available at all times during and after the studies so that all researchers can access the data and evaluate the results.	Site-specific future development will be subject to additional studies.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	12	Birds	the BLM claims "potential effects on waterbirds would be minimized by using the shortest road routes and smallest pads and by placing gravel in uplands and well-drained habitats composed of moist and shrub tundra. ³⁵ " The BLM does not explain what protocols would be used to restrict the length of roads or the size of pads. The BLM states that the construction of oil and gas infrastructure is "unlikely to affect regional or global population sizes or nesting densities of breeding birds. ³⁶ " The BLM fails to support this claim with quantitative analysis of the impacts of oil and gas activities on birds. Without providing a quantitative assessment it is difficult for the public to scrutinize the BLM's findings. The BLM states that while 320 acres of the Coastal Plain could be transformed into gravel mines, impacts on birds could be ameliorated by transforming used gravel pits into wetlands. ³⁷ This fails to address the impacts of habitat loss on terrestrial birds.	The text has been revised for clarity. A more quantitative analysis is not possible without specifically proposed projects. The comment inaccurately paraphrases the EIS discussion of remediation of gravel pits. No effect on regional population sizes or density of birds has been documented in the older and more densely developed oil fields. See J. C. Truett and S. R. Johnson, eds. 2000. The Natural History of an Arctic Oil Field: Development and the Biota. Academic Press, San Diego, California.
82.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	15	Birds	The BLM should also assess how oil and gas activities could impact populations of birds that migrate through Canada, especially the Buff-breasted Sandpiper, Red-necked Phalarope and Short-eared Owl, species listed under Canada's Species at Risk Act .	These species are not excluded from analysis. Canada's Species at Risk Act list has been incorporated into the species list and conservation listings table. No bird species is anticipated to suffer population-level impacts as a direct result of the proposed action. A section covering transboundary effects has been added.

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83.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	15	Birds	The DEIS states "although high numbers of birds use the lagoons, they are highly mobile and likely would be able to move to adjacent similar areas if necessary. ³⁸ " The BLM does not consider how displacement from lagoons could impact stress levels among birds or cause them to waste energy. The BLM does not analyze how disturbance of lagoon ecosystems could disrupt foraging patterns, or lead to increased competition for resources in habitats where birds are displaced to.	The EIS accurately describes how screeding activities might result in temporary displacement of birds from lagoon habitats. Such displacement would be short term and localized and is not anticipated to result in negative impacts on any species. Available evidence suggests that alternative habitats are available and that competition for resources is unlikely to change (see Flint et al. 2004). Increased stress and energy expenditure are described for all species on pages 3-96 to 3-98 and for birds affected by screeding specifically on page 3-98.
84.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	30	Birds	The BLM fails to consider the impacts of screeding on chicks, which are vulnerable to environmental disturbance and are flightless throughout much of the summer.	Young of the year are included among birds molting in the lagoons, a period during which adults, too, are flightless. At this time of the year, such birds have attained nearly adult size and are largely indistinguishable from adults during surveys. All impacts of screeding apply to all birds present, including young of the year. Text has been revised for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
85.	Sarah	Keller	—	94078	3	Birds	As a biologist, I am aware of the importance of the Migratory Bird Treaty Act (MBTA) of 1918. The federal government has the responsibility for environmental protection and conservation of migratory birds. It well documented that millions of birds of many species use the ANWR and the coastal plain to nest, forage and safely molt. Due to the MBTA, let me repeat, the federal government including the BLM has the responsibility for the environmental protection and conservation of migratory birds. The DEIS minimizes impacts to the point of absurdity. For example, if the 2000 acre rule (the limit on surface area development) in the DEIS was in keeping with the MBTA, it would include gravel mines, pipelines, and pads and other disturbances to the coastal plain. The areas used for development cannot at the same time be used by birds for the uses stipulated in the MBTA. These areas (gravel mines, pipelines, pads, etc.) must be counted within the 2000 acre rule. Nor can these affected areas can be reclaimed to their original use in any reasonable time period.	The MBTA is described on page D-4. Additional mention has been added to the avian section. Virtually all birds found in the planning area are migratory, share populations with other countries and often other continents, and are protected similarly by the MBTA. The MBTA has never been interpreted to protect habitat but attempts to prevent injury, mortality, and egg and nest loss. The EIS clearly outlines and recognizes potential negative impacts of development and does not attempt to minimize effects. Legal interpretation of the 2,000-acre limit to surface impacts is applied. It is correct that reclaimed areas are not used similarly to undisturbed areas and that even that degree of reclamation requires decades.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	16	Birds	the DEIS barely mentions how dust could harm habitat and thus negatively affect the productivity of nesting birds, and also fails to adequately analyze impacts to birds from other oil and gas infrastructure. The DEIS also downplays how oil spills and spills of other contaminants could harm birds and their habitat, impacts from winter activities like construction, habitat loss from hydrological changes, and impacts from aircraft traffic. BLM's cumulative impacts analysis is likewise defective, because it ignores impacts from seismic activity, melting sea ice, marine traffic, and impacts to migratory birds along their routes.	Analysis of impacts on habitats is discussed extensively under Habitat Loss and Alteration, and impacts on birds are summarized. The analysis of spill impacts has been revised and expanded. Additional details on seismic exploration have been incorporated. A global search for "dust" reveals numerous sections of the EIS that discuss the effects of dust on vegetation, snowmelt, water quality, and more. In the bird section, dust is mentioned at least 10 times, and the impacts are thoroughly outlined, with references to the vegetation section. Discussions of seismic exploration, oil spills, and cumulative impacts have been revised and expanded.
87.	—	—	Alaska Department of Natural Resources	94102	85	Birds	61 Appendix J, Table J-9, Page J18 Birds Probable typo: Fao should be changed to Falco as the genus for the American Kestrel, Merlin, Gyrfalcon, and Peregrine Falcon.	Typos have been corrected.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
88.	Tim	Whitehouse	PEER	95601	15	Birds	Information gaps for bird phenology o Although surveys have demonstrated the importance of the Refuge lagoons for waterbirds, there is poor understanding of the phenology of their use of this habitat. In addition, climate-mediated changes to the Beaufort Sea nearshore areas may be affecting benthic prey communities and ice conditions, and therefore the timing of when birds use the lagoons could be affected. o Post-breeding phenology of adult shorebirds using the 1002 Area is poorly understood, and so far, the only data available from recently deployed tracking devices are for buff-breasted sandpipers from breeding locations to the west of the Refuge. o The amount of time birds remain at key stopover sites is virtually unknown for most birds using the 1002 Area. These data are important for calculating disturbance or displacement risk and determining seasonal abundance estimates.	The analysis is done with the best available information.
89.	Tim	Whitehouse	PEER	95601	16	Birds	Information gaps for potential impacts to birds from oil and gas development and disturbance o Before an assessment of potential impacts of development can be conducted, better information on abundance, distribution, habitat use, and phenology of breeding and non-breeding birds in the 1002 Area is required. Therefore, the topics below only address the most apparent immediate needs. o The extent to which wetlands will be lost due to water use for oil and gas development needs to be better understood to evaluate impacts on birds. Exploration and development activities generally require substantial volumes of freshwater, but the 1002 Area contains less than 1/10th the density of lakes compared to areas to the west where oil and gas activities are ongoing. In	The analysis is done with the best available information. Few lakes have been surveyed in the ARCP, as stated now in the text. Changes in avian predator abundance are described under Attraction to Human Activities and Facilities. No additional information is available on contaminant exposure in the area. All details are correctly stated in the comment.

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89. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	addition, 1002 Area lakes tend to be shallower and freeze to the bottom during winter. Therefore, wetlands and waterbodies, especially where clustered, have high value for birds inhabiting the 1002 Area. Because of this, activities that affect the availability, seasonality, or flow of water could have different effects on birds, their habitats, and their foods in the 1002 Area compared to areas further west, but how and to what extent is unknown. o Changes in the avian predator community makeup, predator abundance, and impacts to avian productivity are some of the most commonly described consequences of industrial activity for birds breeding on the Alaska Coastal Plain. Shelter associated with winter exploration activities may attract predators such as arctic fox and raven. Little is known about the contemporary predator community makeup or abundance in the 1002 Area. o Limited contemporary exposure data for birds are available for contaminants related to oil and gas development in the 1002 Area.	(see above)
90.	Tim	Whitehouse	PEER	95601	17	Birds	What studies/surveys need to be conducted to fill information gaps? o Conduct aerial- or ground-based inventories of breeding birds. Species groups should include waterfowl, loons, gulls, shorebirds, and landbirds and should also include both area-wide and sitespecific surveys. These data will provide contemporary information on distribution and abundance and help identify important areas for birds. Prioritization of surveys should be based on conservation needs. Because this information may be important to leasing, and because year-to-year variability will require baseline data to be collected over several years, surveys should begin as soon as	Site-specific surveys may be required prior to the permitting of future projects.

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90. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	possible. o Conduct aerial- or ground-based inventories of Brooks Range, foothills, and Coastal Plain rivers for breeding cliff-nesting raptors. Because raptors may begin using the Coastal Plain while winter exploration activities occur, these surveys/studies should begin in the near future. o Conduct surveys to estimate abundance and distribution of predators of birds and eggs. Additional studies should also be conducted to determine current makeup of nest predators for common or sensitive bird species, and gather baseline information on movement patterns of foxes in the 1002 Area. Because high annual variability will require baseline data to be collected over many years, surveys and studies should begin as soon as practical. o Conduct studies on the foraging ecology of nest predators and how individuals choose food items and adjust diet patterns based on alternative prey. Objectives should target ways to inform potential management actions if local predator abundance is found to increase in response to oil and gas related activities. o Determine post-breeding abundance, distribution, habitat use, and phenology of waterfowl and loons in lagoons, and of shorebirds in deltas and coastal areas. Prioritization should be based on species' conservation need and sensitivity to disturbance and development. o Investigate how water availability and the patchiness of waterbodies in the 1002 Area affects how disturbance and development may impact birds. o Update baseline contaminant exposure information for birds breeding in the 1002 Area and using deltas and lagoons for fall staging, with particular emphasis on hydrocarbon exposure and how contaminant burdens may affect reproduction, survival, and	(see above)

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90. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	subsistence value and human health. - o The above studies should incorporate how predators and birds adjacent to the 1002 Area may change their behavior in response to activities directly associated with 1002 Area oil and gas development. - o Much of the data from surveys and studies conducted in the 1002 Area are not widely available. The Refuge is working with FWS Science Applications to build a publically accessible database for the long-term dataset for the Canning River Delta tundra nesting bird project. Comparable efforts should follow for other projects to ensure appropriate storage and management of important data and allow for public data access to both contemporary and historical data.	(see above)
91.	Harry K.	Brower Jr.	North Slope Borough	95612	42	Birds	The DEIS should reflect that eiders migrating past the Coastal Plain may be vulnerable to the potential impacts of spilled oil that reaches the marine environment.	Additional text has been added to incorporate information on eiders in the marine environment.
92.	Harry K.	Brower Jr.	North Slope Borough	95612	43	Birds	Finally, we recommend that BLM improve the analysis regarding cumulative impacts to bird species. 18 The DEIS does not identify the past, present, and reasonably foreseeable actions that were included for consideration. BLM should further expand its statement that there would be an "increase [in] the occurrence and intensity of these common impacts," and provide a more robust analysis of the impacts to bird species associated with the Leasing Program on the Coastal Plain in conjunction with these other cumulative actions.	The cumulative effects section has been expanded. Past, present, and reasonably foreseeable future actions are presented in Appendix F (see Table F-1). A reference to Appendix F has been added to the text in the bird section.

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93.	Withheld	Withheld	—	96175	3	Birds	How is the Migratory Bird Treaty Act of 1918 going to be recognized and enforced? Some of the new conventions to the treaty stipulate protections not only for the birds themselves but also for the habitats necessary for their survival. This is a critical omission in this DEIS. In Vol. 2, p. D-4, the DEIS lists what the Act makes illegal regarding migratory birds, but it does not mention killing birds or depriving them of their habitat. Subsistence users can hunt migratory birds through a legal process. But subsistence users do not jeopardize the habitat of the animals and birds they hunt. Displacing bird breeding, nesting, and staging grounds can effectively threaten or kill hosts of migratory birds. Of the 156 species recorded on the Coastal Plain (Vol 1, 3-85), only 57 species occur in substantial numbers, leaving 99 species as uncommon or rare. The DEIS states, "Potential loss and alteration of habitat from direct effects of gravel deposition and indirect effects of dust, thermokarsting, and impoundments would be long term and would occur over about 17,000 acres (2,000 acres total gravel footprint plus approximately 15,000 acres within 328 feet), or about 1 percent of the program area (1,563,500 acres)" (Vol. 1, 3-95). But the actual habitat areas impacted depend on the configuration of roads: "... with a standardized footprint of 750 acres, an additional 11,820 acres of tundra within 656 feet was calculated, an additional area about 15 to 16 times larger than the gravel footprint. With a 2,000-acre gravel footprint at peak development, disturbance and displacement of breeding birds in tundra habitats could occur over about 31,000 acres, or about 2 percent of the program area" (Vol. 1, 3-97).	The MBTA is described on page D-4. An additional description has been added to the avian section. Virtually all birds found in the planning area are migratory, share populations with other countries and often other continents, and are protected similarly by the MBTA. The MBTA has never been interpreted to protect habitat but attempts to prevent injury, mortality, and egg and nest loss. However, the MBTA M-Opinion has interpreted the act to allow incidental take. There are other proactive components of the MBTA that still guide BLM actions. The BLM has many other laws, regulations, and policies that protect (or encourage protection of) migratory birds. Impacts of displacement are described and are unlikely to include mortality. Uncommon or rare status in the program area does not indicate threatened status or particular conservation concern. Quotes made from the EIS regarding habitat loss and alteration, and disturbance and displacement appear accurate.

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94.	Withheld	Withheld	—	96867	6	Birds	3-95 “the impact on birds would be long term and somewhat ameliorated by reclamation plans (i.e., terrestrial breeding habitats could be replaced by aquatic habitats).” Birds that require terrestrial breeding habitats cannot relocate to aquatic habitats	The EIS states, “Avian habitats would be lost to material sites, but rehabilitated sites would likely be used by some species of nonbreeding, breeding, and brood-rearing waterbirds. The potential habitat loss or alteration from gravel excavation would affect up to 320 acres of surface disturbance; the impact on birds would be long term and somewhat ameliorated by reclamation plans (i.e., terrestrial breeding habitats could be replaced by aquatic habitats).” There is no suggestion that habitats would be restored or that birds would change their habitat preferences.
95.	—	—	United States Fish and Wildlife Service	97942	90	Birds	Section 3.3.3 Birds, Affected Environment, Shorebirds: Only the following 10 species are fairly common, common, or abundant in the program areas: American golden-plover, ruddy turnstone, semipalmated sandpiper, red-necked phalarope, red phalarope, Western sandpiper, dunlin, stilt sandpiper, pectoral sandpiper, and long-billed dowitcher. The following four additional species are less common: semipalmated plover, Baird's sandpiper, whimbrel and buff-breasted sandpiper (based on PRISM surveys reported in Brown et al. 2007). Data from transmitters indicate that some birds also migrate westward across the ARCP before migrating southwest across Alaska and down either the Pacific Flyway or the East Asian-Australasian Flyway. Recommend correcting the information related to species abundance and including information related to the eastward migration that occurs. Brown et al. (2007) is the best source of data for shorebirds relative to the project area.	Relative abundance information in the EIS is from Pearce et al. 2018, which incorporates and cites the data from Brown et al. 2007 for shorebirds. Brown et al. 2007 is also cited by the EIS for various other details. Text has been revised regarding shorebird migrations, and a reference has been added to the radiotelemetry project by Taylor et al. 2011.

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96.	—	—	United States Fish and Wildlife Service	97942	91	Birds	Section 3.3.3 Birds, Affected Environment, Climate Change: Although summer duration may increase due to climate change effects, it is unlikely that insectivores will increase as invertebrate emergence is mediated by snow melt initially, followed by cumulative degree days of temperature. The volume of invertebrates may be limited, with the emergence simply occurring earlier. Contrary to what is stated in the DEIS, avian habitat is changing rapidly, both on the coast and inland tundra areas. Comparison of photographic images taken at Prudhoe Bay in the 1980s and the present show the landscape drying up, with a change from low-centered polygons to high-centered polygons (see Liljedahl et al. 2016). This in turn is leading to drainage of uplands and creation of larger water bodies that may indeed be good for species of waterfowl and loons. River deltas may also be affected from reduction in glacier melt-off. This change and the storm surges could affect migratory birds through changes in invertebrate distribution and composition (Churchwell et al. 2018). The DEIS does not correctly assess the potential impacts to birds and their habitat resulting from the changing climate. Please ensure the EIS accurately assesses the potential impacts to birds and their habitat resulting from a changing climate based on the best available science	The EIS does not suggest that insectivores would increase in abundance; rather, it says, "It is unclear if birds relying on insects to feed their young (songbirds and shorebirds) could adapt to hatch at the optimum time as insect hatch continues to advance (Grabowski et al. 2013)." The BLM has revised the text to clarify that rapid changes in coastal habitats are possible. Potential effects on nearshore benthic invertebrates have been added. Additional text has been incorporated to the discussion of climate change.

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97.	—	—	United States Fish and Wildlife Service	97942	92	Birds	Section 3.3.3 Birds, Affected Environment, Direct and Indirect Impacts: The DEIS understates the potential impact from water removal during ice road construction on wildlife. The 1002 Area has relatively few water resources compared to the NPR-A and the use of large volumes of water could negatively affect nesting habitat in the succeeding summer. Breeding grounds are the only place for the birds to increase their numbers, and thus are an essential part of the annual cycle for maintaining bird numbers. Please ensure the document more accurately reflects the potential impacts to breeding birds from the project as a result of water removal.	Impacts associated with water withdrawal are discussed on page 3-94 and accurately indicate that important nesting habitat could be affected and that recharge rates are a concern. Revisions have been made to this section.
98.	—	—	United States Fish and Wildlife Service	97942	93	Birds	Page 3-92: The indirect effects of post-leasing oil and gas activities on birds should be included in the DEIS, including the indirect effects of increasing contaminant concentrations below levels that would cause mortality. This discussion should include mobilization of contaminants, particularly heavy metals, from climate change (e.g., flood events contributing to increased erosion and release of contaminants from glaciers); earth-disrupting activities contributing to dust, sedimentation, or erosion; and activities that may result in melting permafrost with subsequent mobilization of mercury. These activities have the potential to increase contaminant concentrations in birds of the Arctic Refuge, especially those that eat invertebrates (shorebirds, nesting waterfowl) and fish (loons), and in raptors to levels below those that may cause mortality, but which may still result in population-level effects such as decreased productivity.	The BLM has added discussions of contaminant mobilization from dust and associated with thermokarst from climate change.

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99.	—	—	United States Fish and Wildlife Service	97942	94	Birds	Page 3-99: We disagree that “salt-water spills would not be toxic to birds,” especially if spills occurred in waterfowl breeding ponds. Newly hatched ducks have poorly developed salt glands and exposure to elevated salinity can cause impacts including mortality (e.g., DeVink et al. 2005). Additionally, saline spills can kill invertebrate prey.	The section on spills has been revised for clarity.
100.	—	—	United States Fish and Wildlife Service	97942	95	Birds	Page 3-84, Paragraph 7: Arctic Refuge CCP 4.3.6 states, “In the northern foothills of the Brooks Range, Arctic coastal plain and adjacent marine waters, 158 species have been recorded”. It appears the species list from Appendix F in the CCP was used here to assign a number of 158 species, but the inclusive areas for these sections is slightly differently between the CCP text and Appendix F. Please change, “According to the USFWS (USFWS 2015a), 156 bird species have been recorded in the Arctic Refuge on the northern foothills of the Brooks Range, in the ACP (an area inclusive of the program area), and in adjacent marine waters” to “According to the USFWS (USFWS 2015a; Appendix F), 156 bird species have been recorded in the Arctic Refuge Coastal Plain [i.e., the area between the coast and the Brooks Range inclusive of coastal areas (lagoons, barrier islands, and Beaufort Sea) and inland areas (uplands near the foothills of the Brooks Range)]”.	It is correct that the 201 species listed as recorded in the Arctic Refuge in Appendix F of the USFWS CCP (USFWS 2015) were used to compile the list of 156 (not 158) bird species on the Coastal Plain of the Arctic Refuge. There is no list specifically for the program area. The description provided by the EIS accurately represents the criteria used to identify species from the original list that are likely to occur in the program area.

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101.	—	—	United States Fish and Wildlife Service	97942	96	Birds	Page 3-85, Paragraph 1: The statement, "With few exceptions, all birds in the program area are migratory and are present only during the summer breeding season, May to September, depending on species" is incomplete. Several raptor species may occur during the latter part of winter in the Program Area. Breeding golden eagles return to Alaska, including the Arctic Refuge, from late February to mid-April, with non-breeders arriving later (summarized in Kochert et al., 2002). Within the Arctic Refuge, most golden eagle nests are initiated in mid-April (range: late March to early May) (Young et al., 1995). Some snowy owls winter on Arctic breeding grounds, but most arrive during April and May, with most egg laying occurring in mid-May (summarized in Holt et al., 2015). Some marine birds occur in the area throughout October and into November and leave with advancing sea ice. In the immediate area offshore, such species groups include albatrosses, murrelets, puffins, guillemots, seaducks, and sometimes shearwaters (Kuletz et al. 2015; Kuletz and Labunski 2017, Appendix 1; USFWS data). Please change to, "With few exceptions, all birds in the program area are migratory and present February to November, depending on species".	Most birds are not present from February to November. The timing of the presence of raptors on the North Slope is described accurately in the section Raptors. The BLM made revisions for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Wendy	Loya	USFWS United States Fish and Wildlife Service	97942	97	Birds	Page 3-85, Paragraph 1: Some snowy owls winter on Arctic breeding grounds, but most arrive during April and May, with most egg laying occurring in mid-May (summarized in Holt et al., 2015). Appendix F of the CCP states, "Rock ptarmigan (<i>Lagopus muta</i>) - Common permanent resident in all areas of Refuge." Please change, "Winter residents include small numbers of ravens and ptarmigan, dippers near open running water, and occasional gyrfalcons" to, "Resident birds include ravens, ptarmigan, dippers near open running water, snowy owls, and gyrfalcons". Cite the CCP and citations below.	Snowy owls were not added to this statement as they are not considered resident species, although snowy owls may be present in small numbers in winter, as is accurately described in the section Raptors. The source information provided here is Appendix J, and reference to that appendix provides sources for these details.
103.	—	—	United States Fish and Wildlife Service	97942	98	Birds	Page 3-85, Paragraph 2: Sentence, "Shorebirds and passerines are the most abundant guilds of nesting birds on the ACP (Liebezeit et al. 2009)" could be more specific. Data on population size is available for the ARCP, so using information for the whole of the ACP seems unnecessary. Also, the cited reference did not conduct extensive surveys across the whole of the ACP for estimating density, therefore this reference does not support the statement as given. Please change to, "Shorebirds and passerines are the most abundant guilds of nesting birds on the ARCP (Bart et al. 2012)."	The text has been revised.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
104.	—	—	United States Fish and Wildlife Service	97942	99	Birds	Page 3-85, Paragraph 3: The Affected Environment coverage of the "marine vessel route to Dutch Harbor" should be expanded. This route may impact areas used by the ESA listed short-tailed albatross and species of concern such as yellow-billed loon, red-legged kittiwake, Aleutian tern, and Kittlitz's murrelet. Special consideration should be given to Important Bird Areas and "hotspots" that occur along the route. For examples, the area near the mouth of Barrow Canyon (and around Point Barrow) is a "hotspot" of marine bird and marine mammal activity throughout summer and fall "hotspots" occur offshore from Wainwright (head of Barrow Canyon) and over Hanna Shoal area (see Kuletz et al. 2015). Any marine vessel route would pass by large seabird colonies at Cape Lisburne (northernmost seabird colony of AMNWR) and Cape Thompson. Vessels would have to go through Barrow Strait, an Important Bird Area (Smith et al. 2017) and recognized "hotspot" for marine birds (Humphries and Huettmann 2014; Kuletz et al. 2015). The Bering Strait region supports mixed-species colonies of millions of birds (Stephensen and Irons 2003), with some of the largest seabird colonies in the world on Diomedes, King Island, St. Lawrence Island, and farther south - St. Matthew Island. An estimated 12 million seabirds aggregate in the Bering Strait region in summer through early fall (USFWS 2014). There are many "Important Bird Areas" identified along the route to Dutch Harbor and nearby Aleutian passes (Smith et al. 2014; 2017). Please add "waterbirds" and "larids" to the groups discussed in this section.	Additional information on birds occurring near the marine vessel route and important bird areas near that route has been incorporated.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	—	—	United States Fish and Wildlife Service	97942	100	Birds	Page 3-85, Paragraph 4: The statement, "The ARCP represents a substantial portion of the Beaufort Sea coastline in Alaska. Accordingly, it also supports a large number of birds during the important nesting, rearing, and migration staging periods" is incomplete. The coastal lagoons and deltas provide important stopover habitat during spring migration/pre-breeding period, as well. Please change to, "The ARCP represents a substantial portion of the Beaufort Sea coastline in Alaska. Accordingly, it also supports a large number of birds during the important pre-breeding, nesting, rearing, and migration staging periods."	The text has been revised.
106.	—	—	United States Fish and Wildlife Service	97942	101	Birds	Page 3-85, Paragraph 4: The statement, "Prior studies (summarized in USFWS 2015a) have demonstrated that at least several hundred thousand breeding and nonbreeding birds use the ARCP and program area during the short arctic summer" is incomplete. Likely as many or more birds use the ARCP during the fall. Please change to, "Prior studies (summarized in USFWS 2015a, Pearce et al. 2018, USFWS and BLM 2018) have demonstrated that at least several hundred thousand birds use the ARCP during for breeding in the short arctic summer and fueling and resting during migration in the fall".	The text has been revised.
107.	—	—	United States Fish and Wildlife Service	97942	102	Birds	Page 3-86, Paragraph 1: The unpublished data cited here belongs to USFWS, not Mr. Latty. Also, one nest was included in an unpublished report, (Kendall and Villa 2006). Please change "(Laity, unpublished data)", to "(Kendall and Villa 2006, USFWS, unpublished data)".	Without access to the unpublished report, it cannot be cited; however, USFWS unpublished data are acceptable and adequate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
108.	—	—	United States Fish and Wildlife Service	97942	103	Birds	Page 3-86, Paragraph 1: The statement "The spectacled eider is an uncommon breeder in the program area, and nests have been documented only on the Canning River delta" only pertains to recent records of known spectacled eider nests found during operations of a primarily shorebird research site on the Canning River Delta and is therefore misleading. An exhaustive search for all records of spectacled eider nests occurring in the program area has not been conducted. This statement should also not be interpreted to mean that all locations within the program area have been searched to determine presence or absence. Rather, it only means that a few spectacled eider nests were found as part of other operations (primarily shorebird research) at a single small site on Canning River delta. There have been NO systematic ground surveys specifically targeting eider nests (outside the barrier islands) anywhere in the program area in the recent past. Please change to, "The spectacled eider is an uncommon breeder in the program area. Nests have been documented on the Canning River delta, but contemporary systematic ground surveys targeting tundra-breeding eiders have not been conducted."	The source has been changed to USFWS unpublished data. Nest location data (and the original citation) were provided by the USFWS, and no additional records are known. The text was revised for clarity. The EIS already correctly states, "The distribution of nesting is unknown in the program area because extensive surveys have not been undertaken."
109.	—	—	United States Fish and Wildlife Service	97942	104	Birds	Page 3-86, Paragraph 2: Spectacled eider nest density is expected to be low in the program area where suitable habitat is available. Please change, "Low numbers of spectacled eiders are expected to occur in the program area during the pre-nesting period, where suitable habitat is available", to "Low numbers of spectacled eiders are expected to occur in the program area during the pre-nesting and nesting period, where suitable habitat is available."	The text has been revised.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
110.	—	—	United States Fish and Wildlife Service	97942	105	Birds	Page 3-86, Paragraph 3: Within the DEIS 'Waterbirds' appears to include mergansers and seaducks. Please include these groups in the list of Waterbirds (first line of paragraph).	The EIS says, "As treated in this EIS, waterbirds on the ARCP are waterfowl, loons, grebes, and cranes." The statement is accurate as written, as "waterfowl" includes all species of ducks, including mergansers and seaducks. However, a definition of waterfowl has been added— "waterfowl (ducks, geese, and swans)."
111.	—	—	United States Fish and Wildlife Service	97942	106	Birds	Page 3-86, Paragraph 4: In the second sentence, referencing the ACP survey, the text indicates that "prior to 2018 only about a quarter of the area was included..." Insert "program" prior to "area". Without that specificity, the text suggests that only a quarter of the ACP was surveyed, when in fact one quarter of the program area that was surveyed as part of the ACP breeding pair survey.	The text has been revised.
112.	—	—	United States Fish and Wildlife Service	97942	107	Birds	Page 3-86, Paragraph 4: In the last sentence, please change "unreliable" to "imprecise". There is a large difference in meanings, and "imprecise" is the correct term here.	The text has been revised.
113.	—	—	United States Fish and Wildlife Service	97942	108	Birds	Page 3-86, Paragraph 4: Ban et al. (2012) provides estimates of waterbird population sizes for the ARCP. Please consider including these population estimates here.	The text has been revised as appropriate to cite Bart et al. 2012.
114.	—	—	United States Fish and Wildlife Service	97942	109	Birds	Page 3-87, Paragraph 1: The waterbird classification includes waterfowl like Northern pintail that often nest in dryer habitats. Bart et al. (2012) estimated more than 18,000 Northern pintail breed on the ARCP. Please change, "In addition to water body shorelines and islands, most waterbirds use a variety of wet and moist tundra habitats for nesting, often next to water" to "Most waterbird species nest in association with ponds or in wet and moist tundra habitats, but some species primarily nest in drier habitats".	The text has been revised for clarity.

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115.	—	—	United States Fish and Wildlife Service	97942	110	Birds	Page 3-87, Paragraph 1: A significant portion of the estimated hatch dates for several geese species in the program area in some years occur in June. Please change, "After hatching in July and August, most waterbirds occupy lakes and ponds to rear their young, although geese and cranes graze in tundra wetlands" to, "After hatching in June through August, most waterbirds occupy lakes and ponds to rear their young, although geese and cranes graze in tundra wetlands."	The text has been revised for clarity.
116.	—	—	United States Fish and Wildlife Service	97942	111	Birds	Page 3-87, Paragraph 1: The following statement is not accurate for most waterbird species occurring in the program area, "In the late summer, post-breeding and molting (temporarily flightless) waterbirds use coastal lagoons behind the barrier islands. Waterbirds continue to forage in the lagoons in the fall as they stage for the southward migration." Please remove that statement and insert "In the late summer, post-breeding and molting (temporarily flightless) sea ducks (primarily long-tailed ducks) use coastal lagoons. Sea ducks and other waterbirds continue to forage in the lagoons in the fall as they stage for the southward migration."	The text has been revised for clarity.
117.	—	—	United States Fish and Wildlife Service	97942	112	Birds	Page 3-87, Paragraph 1: The statement, "Most waterfowl (swans, geese, ducks) migrate through the central continent to wintering areas across the continental US" is poorly defined and not correct as written. Please change to, "Most geese, swans, and dabbling ducks migrate through Pacific and Central Flyways after leaving the ARCP."	The text has been modified for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
118.	—	—	United States Fish and Wildlife Service	97942	113	Birds	Page 3-87, Paragraph 2: Map 3-15, Post-Breeding and Fall Staging Common Eider, in Appendix A, is incorrectly titled. Map 3-15 depicts locations of likely breeding and post-breeding common eiders from two separate surveys conducted to estimate breeding and post-breeding (staging/molting) sea bird distribution and abundance. Please correct as appropriate.	Map titles have been changed.
119.	—	—	United States Fish and Wildlife Service	97942	114	Birds	Page 3-87, Paragraph 2: Language as written is incorrect and no source is provided for 1976 data. Please change "Common eiders have been increasing in abundance on their barrier island breeding grounds in the Arctic Refuge since 1976, when only 14 nests were found", to "Common eiders appear to be increasing in abundance on their barrier island breeding grounds in the Arctic Refuge since 1976, when only 14 active nests were found (Divoky 1978)".	The text has been revised for clarity. The Divoky reference was not added because the USFWS indicated that coverage of that survey was uncertain.
120.	—	—	United States Fish and Wildlife Service	97942	115	Birds	Page 3-87, Paragraph 2: The statement "Common eiders winter in coastal areas from the Aleutian Islands south to southern Alaska," is not correct. Common eiders breeding on Beaufort Sea barrier islands primarily winter near St. Lawrence Island and Chukota peninsula in the Bering Sea (though some also are known to winter in the Olyutorskij Gulf, northern Bristol Bay, and off the coast of the Yukon-Kuskokwim Delta). Please change to, "Common eiders breeding on Beaufort Sea barrier islands primarily winter near St. Lawrence Island and the Chukota peninsula in the Bering Sea, although some also have been documented wintering in the Olyutorskij Gulf, northern Bristol Bay, and off the coast of the Yukon-Kuskokwim Delta (Petersen and Hint, 2002).	The text has been modified, and citation (Petersen and Flint 2002) was added.

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121.	—	—	United States Fish and Wildlife Service	97942	116	Birds	Page 3-87, Paragraph 2: The statement, "The USFWS conducts annual aerial surveys to estimate the number, distribution, and population trend of breeding common eiders in coastal habitats on the North Slope, including Arctic Refuge lands (summarized in USFWS 2015a)" is not accurate. The USFWS has not conducted aerial surveys of coastal habitats on the North Slope since 2009. Please correct language to recognize aerial surveys are not currently being conducted for common eider on the ACP, and have not in a decade	The statement has been corrected. Dau and Bollinger 2012 report on the last USFWS survey conducted in 2011.
122.	—	—	United States Fish and Wildlife Service	97942	117	Birds	Page 3-87, Paragraph 2: The data referenced in, "In a 2015 ground-based survey conducted across most Arctic Refuge barrier islands, over 800 common eider nests were found (Latty, unpublished data)" belongs to USFWS, not Mr. Latty and the language is imprecise. Please clarify differences in spatial coverage between these two surveys. Please change to, "In a 2015 ground-based survey conducted across most Arctic Refuge barrier islands, over 800 active and inactive common eider nests were found (USFWS, unpublished data). There were differences in spatial coverage between the 1976 and 2015 surveys, primarily because the islands are constantly being reshaped."	The BLM modified the text for clarity and now cites USFWS 2015a regarding increases in abundance of common eiders in the Refuge. Reasons for the increase are unknown, and speculation regarding island physiography is not incorporated here. See, however, climate change sections where the physiography of barrier islands is discussed.

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123.	—	—	United States Fish and Wildlife Service	97942	118	Birds	Page 3-87, Paragraph 4: The statement, "In aerial surveys of nearshore waters and barrier islands conducted during the early post-breeding period (early July 1999-2009)" does not describe the survey referenced. The latest report on that survey, "Aerial Population Surveys of Common Eiders and Other Waterbirds During the Breeding Season - Northwestern Alaska 2006-2009" by Bollinger et al. 2012 states, "The objectives of this Northwestern Alaska Common Eider Survey were to: 1) Estimate a population index during the breeding season...." (2012). The report also states, "All surveys were flown during the interval from 15 June to 01 July (Table 2). Survey timing was intended to coincide with egg laying and early incubation while pair bonds are still intact and prior to the dispersal of males to molting sites" which does not match the statement in the DEIS. Please change this sentence to, "In aerial surveys of nearshore waters and coastal areas near barrier islands conducted during June and early July 1999-2009."	The text has been revised for clarity. Dau and Bollinger 2012 report that the 2011 survey was conducted July 2-7. The egg-laying and incubation period occurs post-breeding, and most of the common eiders recorded are post-breeding males. The numbers of breeding pairs are estimated with a formula, yielding "indicated" pairs, which is too much detail for the EIS. The survey timing, however, was specific to this phase of the breeding period of common eiders, which nest later than most other species recorded on these surveys. For other species, these are virtually entirely post-breeding birds and not in their nesting habitats, although some tundra-nesting birds may also forage in the lagoons (red-throated loons, for example).
124.	—	—	United States Fish and Wildlife Service	97942	119	Birds	Page 3-88, Paragraph 2: Please provide a citation to support the statement, "It is likely that many of the birds using lagoons along the Arctic Refuge coast during post-breeding nested to the east, particularly in northern Canada" or remove.	This statement was removed.
125.	—	—	United States Fish and Wildlife Service	97942	120	Birds	Page 3-88, Paragraph 3, Sentence 1: The 325,000 estimate is 40 years old and therefore should be referenced in the past tense. The most recent (15 year old) estimates are approximately 185,000 (Kendall 2006).	The text was revised for clarity.

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126.	—	—	United States Fish and Wildlife Service	97942	121	Birds	Page 3-88, Paragraph 3: Please provide the Arctic Refuge CCP as a citation for the statement, "Up to 325,000 snow geese of the Western Arctic Population use the ARCP as a staging area for fall migration (USFWS and BLM 2018)". Please change to, "Up to 325,000 snow geese of the Western Arctic Population use the ARCP as a staging area for fall migration (USFWS 2015a).".	The text has been revised.
127.	—	—	United States Fish and Wildlife Service	97942	122	Birds	Page 3-88, Paragraph 4: The Shorebirds of Conservation Concern in the United States of America ~2016 (U.S. Shorebird Conservation Plan Partnership, 2016) is the most up-to-date conservation status document for North American shorebirds; therefore, this list should be identified in the Affected Environment text, not just in the Appendix.	Citation added to text.
128.	—	—	United States Fish and Wildlife Service	97942	123	Birds	Page 3-88, Paragraph 6: The statement, "Shorebirds use a wide range of aquatic, wet, and moist tundra habitats for nesting, often near bodies of water" is not correct as written. While most shorebirds prefer moist tundra, some use drier habitat and riverine areas. For example, whimbrels were only found in upland habitats on previous ARCP shorebird surveys. Please change to, "ARCP shorebirds use a wide range of tundra habitats for nesting. Most species occur in wetland, moist, and riverine habitats, but some species prefer drier upland sites (Brown et al. 2007).". Alternatively, remove this sentence and incorporate the information in the next sentence that includes the Brown et al. citation.	The text has been revised as suggested.
129.	—	—	United States Fish and Wildlife Service	97942	124	Birds	Page 3-89, Paragraph 1-3: This section excludes discussion of bald eagles. Although not as abundant as golden eagles, bald eagles also occur on both the coastal plain and in the foothills of the Brooks Range. Please update text to reflect this information.	Bald eagles are correctly listed in Table J-9 as casual visitors to the Coastal Plain, and they are not known to breed north of the Brooks Range. Text has been added to recognize their occurrence and protection under the BGEPA.

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130.	—	—	United States Fish and Wildlife Service	97942	125	Birds	Page 3-89, Paragraph 2: Up to several thousand shorebirds at a time may occur on individual river deltas in July and August (Churchwell 2015). Please change, "Most of the deltas are used by large numbers of foraging shorebirds" to "Most of the deltas are used by large numbers of foraging shorebirds. Up to 4,000 shorebirds were counted on daily surveys at Jago and Okpilak River Deltas in 2011 (Churchwell 2015)"	The text has been revised, and the Churchwell reference was added.
131.	—	—	United States Fish and Wildlife Service	97942	126	Birds	Page 3-89, Paragraph 4, Line 7: Additional larid species encountered along the vessel route to Dutch Harbor (USFWS survey data, most in Kuletz and Labunski 2017) would include slaty-backed gull, red-legged kittiwake, Aleutian tern; (latter two are breeding birds of conservation of concern). These species should be included here. Also, it was difficult to determine the vessel route, and not clear what that route would be used for - or how much vessel traffic the project would generate (especially through the Bering Strait). This information is necessary to adequately assess the affected environment and potential impacts.	The text has been revised as requested to list these three additional species. Appendix Table J-10 includes slaty-backed gull, red-legged kittiwake, and Aleutian tern; their conservation status is provided. Figure 3-6 illustrates the route, and additional details are provided in Appendix B. Annual barge traffic is described in Appendix B as comprising two barge transports per year.
132.	—	—	United States Fish and Wildlife Service	97942	127	Birds	Page 3-89, Paragraph 5: Last line of paragraph. When offshore or over marine waters, jaegers also eat fish (and scavenge or steal those from other seabirds and larids). Please correct this in text.	The text correctly states jaeger foods during breeding season, which is the subject of this sentence. There is no need to identify jaeger foods at sea (not done for other species at sea).

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133.	—	—	United States Fish and Wildlife Service	97942	128	Birds	Page 3-91, Paragraph 2: Line 1-2. From our USFWS at-sea surveys in the waters off of ARCP, in addition to ones listed in Table J-9, glaucous gull, black-legged kittiwake, Ross's gull, Sabine's gull, and Kittlitz's murrelet have also been recorded (see Kuletz and Labunski 2017, Appendix I for maps, or Kuletz et al. 2015 for some species; also USFWS/Kuletz, unpublished data). Please update text to reflect this information.	Larid species listed were added to the Larid section. See Table J-9 to distinguish between larids and seabirds. Kittlitz's murrelet was added to the list of seabirds recorded offshore, as requested. Reference to Kuletz et al. 2015 was added. Kuletz and Labunski 2017 were not cited here because the data provided are inadequate to verify the locations of these sightings (except for black-legged kittiwakes).
134.	—	—	United States Fish and Wildlife Service	97942	129	Birds	Page 3-91, Paragraph 3: The DEIS contains few details regarding the "the marine vessel route to Dutch Harbor." Vessels traveling through the Chukchi Sea and down length of the Bering Sea to Dutch Harbor could encounter more than 63 species of marine birds. As written, little information is given for the Affected Environment for the vessel route to Dutch Harbor, which reduces the ability to estimate potential impacts or threats. Please clarify the details of the "the marine vessel route to Dutch Harbor", fully describe the Affected Environment in the appropriate sections in 3.3.3, and then discuss the potential impacts in the Direct and Indirect Impacts section beginning on page 3-92.	Additional details on the marine route have been added to Chapter 2, and the impacts assessment has been revised accordingly.

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135.	—	—	United States Fish and Wildlife Service	97942	130	Birds	Page 3-91, Paragraph 3: The ESA-listed short-tailed albatross occurs regularly (if not abundantly) in the southern portion of the route, and occurs in the northern portion in late summer and fall (especially the northwest outer shelf break, near the International Date Line), and near St. Lawrence Island. The short-tailed albatross and two other albatross species (black-footed and Laysan) have all increased in abundance and shifted distribution northward in the Bering Sea in recent decades (Kuletz et al. 2014), and so would be present en route to Dutch Harbor. The Aleutian passes, especially Unimak Pass near Dutch Harbor, have the highest risk to seabirds from vessel accidents (Renner and Kuletz 2015, Humphries and Huettmann 2014) and very high densities of albatrosses occur there. The first recorded sighting of a short-tailed albatross in the Chukchi Sea was made in 2011 (Day et al. 2013); thus, it could be encountered in that portion of the vessel route as well. Please update text to reflect this.	Additional information describing the marine route has been added to Chapter 2, and the impacts assessment has been revised as appropriate. Black-footed and Laysan albatrosses are listed in Table J-10 as occurring on the marine route.
136.	—	—	United States Fish and Wildlife Service	97942	131	Birds	Page 3-91, Paragraph 5: It should be noted here that seabird die offs have occurred in the Bering Strait region in 2017 and 2018 (USFWS 2017, 2018) and were associated with very warm water conditions; die offs in this region were previously very rare (or perhaps never recorded, with exception of the 2013 die off near St. Lawrence Islands). Birds died from starvation, although effects of toxins cannot be ruled out. The combined effects of increased vessel traffic, disturbance, noise, and changes in prey and sea ice have potential for increased cumulative effects. Please update text to reflect this information.	Mention of warm water and seabird die-offs has been added to the Climate Change section.

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137.	—	—	United States Fish and Wildlife Service	97942	132	Birds	Page 3-91, Paragraph 5: Predation is the primary factor affecting productivity for many ARCP breeding birds, but recent work suggests predation is increasing in the Arctic and maybe linked to climate-induced shifts in predator-prey relationships. Please add, "Recent work suggests predation is increasing in the Arctic and is linked to climate-induced shifts in predator-prey relationships (Kubelka et al. 2018)".	The text has been revised.
138.	—	—	United States Fish and Wildlife Service	97942	133	Birds	Page 3-91, Paragraph 5: A climate change vulnerability assessment on Alaska's North Slope identified the barrier island nesting Pacific common eider as the marine bird at highest risk of climate change impacts, including impacts from predicted sea level rise, increasing storm surges, and erosion and/or restructuring of barrier islands (Liebezeit et al. 2013). With the low elevation profiles of barrier islands and preference of low-lying nest sites by common eider, rising sea level and increasing storm surges may have significant effects on nest success of eiders. The intensity and frequency of storm surges in the Beaufort Sea is increasing, and sea levels have been predicted to rise by 0.26-0.98 meters by 2100 (Church et al. 2013). Model predictions suggest that wave heights and storm surges will continue to increase as ice retreats (Church et al. 2013, Lintem et al. 2013, Vermaire et al. 2013). In the future, eiders nesting on barrier islands may be impacted by both the increasing frequency and magnitude of storm surges, and an earlier timing of these events. Please include the following in this section: "Some species nesting on barrier islands, such as common eiders, could be negatively affected by predicted sea level rise and increasing storm surge. Both could flood nests and decrease productivity (see Liebezeit et al. 2013)."	The text revision was made, and additional text has been incorporated to the discussion of climate change.

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139.	—	—	United States Fish and Wildlife Service	97942	134	Birds	Page 3-91, Paragraph 6: Another potential impact of less sea ice is bigger, rougher sea conditions, which may impact foraging of marine birds, especially less experienced/smaller juveniles. Please update text to reflect this information.	The text has been revised to acknowledge increased wave action and the potential effects on foraging birds.
140.	—	—	United States Fish and Wildlife Service	97942	135	Birds	Page 3-91, Paragraph 6: Please provide a citation for the statement, “a delay in freeze-up in fall should be advantageous to the slow-growing young of such species as loons and swans, which are not always flight capable by time of freeze-up” or remove.	Citations have been added for loons and swans.

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141.	—	—	United States Fish and Wildlife Service	97942	136	Birds	Page 3-91, Paragraph 7: The statement, "Some species of insect-feeders (shorebirds and songbirds) can initiate nests earlier with early snowmelt, whereas others (jaegers, common eiders, and raptors) do not; however, it is unclear if birds relying on insects to feed their young (songbirds and shorebirds) could adapt to hatch at the optimum time as insect hatch continues to advance (Grabowski et al. 2013)" is incomplete for the body of climate-mediated links for some of these species. For example, as discussed in the cited reference (Grabowski et al, 2013), "The lack of response in the common eider to timing of snowmelt is consistent with other studies that have linked both nest initiation and productivity to the area of marine ice cover adjacent to the nesting grounds." Love et al. (2010) found common eiders nested earlier in warmer years associated with earlier ice-breakup and Chaulk and Mahoney (2012) found spring ice cover was a positive predictor of nest initiation date, but was also linked to smaller clutch sizes. Because climate change is predicted to lead to earlier ice-out along the coast, common eiders breeding on ARCP barrier islands may nest earlier as warming advances, but the advantage or disadvantage of this is yet unclear. For Arctic breeding geese, lower snow cover was also related to earlier egg laying (Dickey et al. 2008). Suggest changing to, "Some species, such as passerines, shorebirds, and waterfowl, initiate nests earlier with early ice-breakup and snowmelt, but the overall impact to demography is still unclear (Dickey et al. 2008, Love et al. 2010, Chaulk and Mahoney 2012, Grabowski et al. 2013)."	The opening sentence of this paragraph establishes the subject as insectivory. Common eiders, jaegers, and raptors, in contrast, are not insectivorous and not affected by the timing of insect emergence, as correctly stated in the EIS. They are not discussed further in this paragraph. The text has been modified for clarity, and a discussion of common eiders and ice cover was added to that discussion (later paragraph). The comment inaccurately characterizes the results of Chaulk and Mahoney (2012), which, in actuality, further verify the negative effects of prolonged ice cover on productivity.

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142.	—	—	United States Fish and Wildlife Service	97942	137	Birds	Page 3-91, Paragraph 8: The statement, "Avian habitat is likely to change slowly with climate change, except for coastal areas subject to erosion and deposition (see below)" appears to be incorrect as written. Most tundra nesting birds in the ARCP prefer wetlands or moist tundra (see Bart et al. 2012). However, Arctic lakes are disappearing (Smith et al. 2005), wetlands depletion is occurring following permafrost disturbance by thermo-erosion (Perreault et al. 2017), and ponds that have been permanent water bodies for millennia, are now completely drying during the polar summer (Smol and Douglas 2007). Therefore, Arctic habitats are already impacted and this loss is predicted to expand in the future [see "Rapid climate-driven loss of breeding habitat for Arctic migratory birds" (Wauchope et al. 2016) for further discussion]. We recommend deleting this sentence or clarifying that habitat changes (e.g., higher water temperatures, less sea ice, lower zooplankton biomass, and smaller species of zooplankton) are already occurring in the marine environment.	The discussion of climate change has been expanded, including clarification that habitat changes already have been documented. Added reference to Smith et al. 2005.
143.	—	—	United States Fish and Wildlife Service	97942	138	Birds	Page 3-92, Paragraph 3: Please add a paragraph specific to marine habitat after this coastal habitat paragraph.	A paragraph about changes occurring offshore and along the marine transportation corridor has been added.
144.	—	—	United States Fish and Wildlife Service	97942	139	Birds	Page 3-92, Paragraph 4: The citation (Hint et al. 2003) does not appear to support the statement, "Erosion of coastal shorelines could increase inundation of tundra by salt water; the resulting salt-killed tundra may be colonized by salt-tolerant species and develop into salt marsh, a rare but important post-breeding habitat for geese." Please correct or remove.	The citation is Flint et al. 2003, and it is included to support the statement that arctic salt marsh habitat is important for geese. The EIS is correct as written; no correction is required.

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145.	—	—	United States Fish and Wildlife Service	97942	140	Birds	Page 3-92, Paragraph 5, Line 7: If post-lease activities include transportation of oil, please address potential impacts to the marine environment. If oil transport includes any marine areas, it is not fully addressed in the draft EIS. Please update this section if oil will be transported in marine areas.	There is no plan to transport product via a marine vessel route. All fluid leaseables will be transported via pipeline as described in Chapter 2.
146.	—	—	United States Fish and Wildlife Service	97942	141	Birds	Page 3-92, Paragraph 6: The statement, "Winter activities would affect few species and low numbers of year-round residents" is incomplete. Breeding golden eagles return to Alaska, including the Arctic Refuge, from late February to mid-April, with non-breeders arriving later (summarized in Kochert et al., 2002). Within the Arctic Refuge, most nests are initiated in mid-April (range: late March to early May) (Young et al., 1995). Some snowy owls winter on Arctic breeding grounds, but most arrive during April and May, with most egg laying occurring in mid-May (summarized in Holt et al., 2015). Based on this information, please change to, "Winter activities would affect few species and relatively low numbers of winter, spring, and year-round residents."	The requested revision would be incorrect. Winter activities will affect birds during winter, and this would not include spring. Spring activities would affect birds during spring; however, non-winter seasons are difficult to define accurately in the Arctic. Note the definitions of status from the RCCP (do not include Winter Resident or Spring Resident). The EIS is correct that few species are present during winter months and all in low numbers. An exception for small numbers of golden eagles is noted. The text has been revised to mention golden eagles and snowy owls among species whose presence could overlap with some late winter activities.

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147.	—	—	United States Fish and Wildlife Service	97942	142	Birds	Page 3-92, Paragraph 6: Potential impacts of oil development on birds are listed as four primary categories, including "injury and mortality, and attraction of predators and scavengers (including both mammals and birds) to human activity or facilities, with subsequent changes in predator abundance", but all are not discussed in the paragraphs that follow. Please consider the following to paragraph 1, page 3-93:"Changes in predator abundance and diversity could occur in all phases. For example, studies demonstrated low winter movement rates and high densities of habituated Arctic foxes in the Prudhoe Bay oil fields compared to more remote sites during winter (Pamperin, 2008; Lehner, 2012). Once uncommon, red foxes now occupy more den sites in Prudhoe Bay than arctic foxes and this shift has been linked to red foxes preference to den near facilities (Stickney et al. 2014). Injury and mortality from collisions with vehicles, structures, and wires and from contaminant exposure (including oil spills) could also occur at all phases, but would likely peak during drilling and operations."	Each of the categories of impact is discussed separately under its own heading in the paragraphs that follow the description of development activities that cause them. Changes to predator abundance are thoroughly described on page 3-100 under the heading "Attraction to Human Activities and Facilities." However, details regarding the abundance of foxes appear in the section on terrestrial mammals, and discussion here is limited to potential effects on birds. Injury and mortality also are described under a separate heading on page 3-98 and are accurately described as affecting birds during all phases of development. All these citations are used in the Terrestrial Mammals section to describe the same details.
148.	—	—	United States Fish and Wildlife Service	97942	143	Birds	Page 3-92, Paragraph 7: The statement, "Exploration occurs during winter and would have little direct effect on birds" may be incomplete if cleanup activities would occur during the snow-free season in relation to exploration. Please address how cleanup operations may impact migratory birds during the snow-free season. These impacts should be acknowledged and the effects should be analyzed	No exploration activities, including cleanup, are described as occurring during the snow-free season.

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149.	—	—	United States Fish and Wildlife Service	97942	144	Birds	Page 3-94, Paragraph 6: The statement, "Drawdowns may cause fish mortality, and lack of fish would make such lakes unsuitable for breeding loons" is incomplete. Most birds using aquatic habitats in the program area feed on aquatic invertebrates. The sentence before states, "Withdrawing water from under ice could ... possibly result in some ... impacts on aquatic invertebrate communities"; therefore, the effects to species that feed on invertebrates should be discussed. Please change to, "Lack of fish would make such lakes unsuitable foraging habitat for some loons. Lower invertebrate abundance, or a shift in invertebrate diversity, may affect the quality of ponds as a food source for birds in general, particularly waterbirds and shorebirds."	The text has been revised for clarity.

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150.	—	—	United States Fish and Wildlife Service	97942	145	Birds	Page 3-94, Paragraph 6: The statement, "The long-term loss of nesting lakes would have potential population consequences for loons, primarily for Pacific and red-throated loons; yellow-billed loons in the Arctic Refuge nest primarily in the northern foothills of the Brooks Range and outside of the program area" is unclear, and may be incorrect depending on how interpreted. Yellow-billed loons are considered a rare breeder on larger lakes in the Brooks Range. Unlike other loons, red-throated loons leave breeding territories to forage during incubation and while rearing chicks. On the Arctic Coastal Plain, these birds generally forage in the marine environment (See Barr et al. 2000, Uher-Koch 2017). In addition, the limiting factors of loons breeding in the program area is unclear, therefore the statement that the loss of a few nesting lakes could have broad population consequences seems somewhat unfounded. It is also unclear if the intention of this sentence is in regards to the loss of fish from lakes or from loss of nesting habitat through drying of lakes. Please consider providing citations to support, or change to, "The loss of nesting lakes by drying could have potential local population impacts for Pacific and red-throated loons." If the sentence is only meant to convey the effects to loons of loss of fish from breeding ponds, please also remove the reference to red-throated loons because they generally feed in the marine environment during the breeding period.	The text has been revised for clarity.

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151.	—	—	United States Fish and Wildlife Service	97942	146	Birds	Page 3-95, Paragraph 1: The statement, “the impact [of gravel mining] on birds would be long term and somewhat ameliorated by reclamation plans (i.e., terrestrial breeding habitats could be replaced by aquatic habitats)” is incomplete as the species groups that are likely to use gravel pits filled with water will be different from those originally displaced. Suggest changing to, “the impact on birds would be long-term. Reclamation may reduce habitat loss if pits are fully transferred back to tundra, but reclaimed tundra is of lower value to breeding shorebirds and passerines compared to unaltered habitat (Bentzen et al. 2018). If pits fill with water, habitat loss may be permanent for the species originally inhabiting the site, but could provide new habitats for waterbirds (i.e., terrestrial breeding habitats could be replaced by aquatic habitats).”	Reclamation of gravel mines will not restore tundra habitats, and the EIS does not imply such. Other parts of the suggested rewrite are fully equivalent to the original statement that terrestrial habitats would be replaced by aquatic habitats.

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152.	—	—	United States Fish and Wildlife Service	97942	147	Birds	Page 3-95, Paragraph 2: The following statement may be incorrect as written: "Future construction of gravel pads and roads would result in potential long-term direct loss of habitat and indirect alteration of habitat. Direct losses from gravel coverage (up to 2,000 acres allowable) would last as long as development projects are active, or until gravel is partially removed from retired roads and pads to restore some habitat features; this is estimated to be 85 years after the first lease sale before all facilities described in the hypothetical development scenarios are abandoned and reclaimed." Gravel pads would always lead to direct loss and potential indirect alteration of adjacent habitat. The above states habitat losses would only occur as long as the project is "active", but this term is undefined and direct loss from gravel coverage would last until gravel is removed. Reclaimed sites in Prudhoe Bay do not provide shorebird and passerine habitat comparable to that found prior to development (Bentzen et al. 2018). Please consider changing to, "Gravel pads and roads would result in the long-term direct loss of habitat and potential indirect alteration of habitat. Direct losses from gravel coverage would last until gravel is removed. In the hypothetical development scenarios, the gravel is predicted to be removed from all facilities 85 years after the first lease sale. Shorebird and passerine habitat quality is expected to be lower for at least 10 years for reclaimed sites (Bentzen et al. 2018)."	The text has been revised, including citation of Bentzen et al. 2018.

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153.	—	—	United States Fish and Wildlife Service	97942	148	Birds	Page 3-95, Paragraph 5: The statement "Potential effects on waterbirds would be minimized by using the shortest road routes and smallest pads" is incomplete as written. Densities of waterbirds and shorebirds is generally greatest in wetlands on the ARCP (Bart et al. 2012). Because here we are comparing the effects of 2000 acre development scenario as described by the Tax Act, making pads smaller wouldn't minimize the effect (i.e. 2000 acres would always be affected). The statement would only be accurate if applied specifically to minimizing footprints in wetlands. Please change to, "Potential effects to waterbirds and shorebirds would be minimized by minimizing footprints in wetlands where densities are generally highest (Bart et al. 2012)."	The text has been revised, and the citation Bart et al. 2012 has been added.
154.	—	—	United States Fish and Wildlife Service	97942	149	Birds	Page 3-95, Paragraph 5: The statement, "Such habitats support higher densities of landbirds and impacts on these species could be greater as a result" is incomplete. Some species of waterfowl and shorebirds occur in higher densities in uplands and well-drained habitats composed of moist and shrub tundra on the ARCP (Bart et al. 2012). Lapland longspurs, the most abundant passerine breeding in the ARCP, occur at somewhat higher densities during the breeding season in wetlands on the ARCP (Bart et al. 2012). Please change to, "Such habitats are important to landbirds and some species of other guilds. Impacts to these species may be greater as a result.	Text has been revised for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
155.	—	—	United States Fish and Wildlife Service	97942	150	Birds	Page 3-95, Paragraph 7: Sea duck densities in coastal areas during the non-breeding season are related to habitat features including wind and wave exposure and substrate type (Esler et al. 2000). Common eider seek foraging habitats where food was most abundant, therefore not all habitat is of equal value (Larsen and Guillemette 2000). Sea ducks also deplete preferred foods when concentrated (i.e., as occurs during molt), causing birds to seek out new foraging sites (Guillemette et al. 1996). Given this information, please provide citations to support the statement, "Although high numbers of birds use the lagoons, they are highly mobile and likely would be able to move to adjacent similar areas if necessary" or remove.	The text has been revised as requested. References Larsen and Guillemette 2000 and Guillemette et al. 1996 were not incorporated because these reports are regarding wintering eiders (not molting long-tailed ducks) and not in Alaska. Prey distribution and habitat quality are unknown, but there is no evidence that habitat is limiting for sea ducks in the ARCP lagoons. Note that displacement is discussed in the EIS, and citations are provided there regarding movement and distribution of molting long-tailed ducks.
156.	—	—	United States Fish and Wildlife Service	97942	151	Birds	Page 3-95, Paragraph 7: ARCP mudflats are used by a large number of post-breeding shorebirds with up to 4,000 semipalmated sandpipers documented at some deltas in late July to mid-August (Brown et al. 2012, Churchwell 2018). If barging or other nearshore activities may affect habitat availability or quality into the late summer, large numbers of shorebirds may be affected. Please address this if it is applicable for the proposed activities.	Barge landing areas would be areas of deeper water close to the shore and would not overlap with mudflats. Barge landing would most likely be in Camden Bay.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
157.	—	—	United States Fish and Wildlife Service	97942	152	Birds	Page 3-95, Paragraph 8: The survey (Fischer et al. 2002) was conducted along a small portion of the Alaska Arctic coast outside the program area and more applicable surveys (i.e., Lysne et al. 2004) are available that covered most of the Alaska Beaufort and Chukchi Seas, as well as the program area. Please remove, "Long-tailed ducks made up 80 percent of the birds on surveys during late summer and fall in nearshore waters of the Beaufort Sea (Fischer et al. 2002). Other species included many of those potentially breeding in the program area, plus common eiders and scoters" and replace with, "Lagoon and near-shore surveys of post-breeding and molting waterbirds were conducted across the Alaska Arctic coast during fall 2002-2003 (Lysne et al. 2004). Up to 20, 28, 29, 33, and 41% of the yellow-billed loons, red-throated loons, long-tailed ducks, scaup, and Pacific loons, respectively, counted during the entire Alaska North Slope survey occurred along the Arctic Refuge coast. Over 28,000 long-tailed ducks were counted in the lagoons and nearshore waters along the Refuge coast in some years".	The text has been revised for clarity. The BLM agrees to replace Fischer et al. 2002 with Lysne et al. 2014. For most species mentioned in the comment, the survey timing probably was not optimal and the total number of birds observed in the ARCP was small; the proportions of the total were not meaningful.
158.	—	—	United States Fish and Wildlife Service	97942	153	Birds	Page 3-96, Paragraph 3: This paragraph is incomplete. It discusses a variety of winter work that may impact resident birds, but does not consider that some cleanup from wintertime travel and construction is generally necessary during the snow-free season. If any summer or fall cleanup will occur because of seismic, construction, or winter travel, this section should include a discussion of potential effects here.	No exploration activities, including cleanup, are described as occurring during the snow-free season.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159.	—	—	United States Fish and Wildlife Service	97942	154	Birds	Page 3-97, Paragraph 3: Impacts to bird densities from chronic disturbances are poorly studied in Arctic Alaska. Studies outside the Arctic found bird densities increased for some species and decreased for others in relation to oil and gas infrastructure (Walker et al. 2007, Bayne et al. 2008, Dale et al. 2009, Gilbert and Chalfoun 2011, Kalyn Bogard and Davis 2014, Ludlow et al. 2015). Please provide citations to support the statement, "Potential impacts of disturbance and displacement ... are unlikely to affect ... nesting densities of breeding birds", or remove the reference about impacts to bird densities. Please consider changing the sentence to, "Potential impacts of disturbance and displacement by summertime construction and operations on the tundra would be long-term and may affect nesting success for some birds near facilities; however, they are unlikely to significantly affect regional or global population sizes."	Revision made as requested.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
160.	—	—	United States Fish and Wildlife Service	97942	155	Birds	Page 3-97, Paragraph 5: The survey (Fischer et al. 2002) was conducted along a small portion of the Alaska Arctic coast outside the program area and more applicable surveys (i.e., Lysne et al. 2004) are available that covered most of the Beaufort and Chukchi Seas in Alaska, as well as the program area. Please change the latter two sentences in this paragraph to, "Common eider are the predominant species nesting on barrier islands and using associated nearshore areas during breeding (Kendall 2005). In aerial surveys of the lagoons and nearshore areas, surf scoters were the predominant species encountered in June and early July and long-tailed ducks in late July and August (Bollinger and Platte 2012, Lysne et al. 2004, Pearce et al. 2018). Long-tailed ducks use the lagoons during their flightless feather molt (Lysne et al. 2004)."	This discussion is regarding the impacts of disturbance and displacement; the paragraph in question is regarding potential disturbing activities in nearshore and lagoon waters, which would occur during barging in late summer. Nesting birds on barrier islands will not be affected. The text has been revised for clarity, and citations were inserted for Dau et al. and Lysne et al. surveys.

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161.	—	—	United States Fish and Wildlife Service	97942	156	Birds	Page 3-98, Paragraph 3: This paragraph primarily discusses how development of the ARCP may lead to increased air traffic in Deadhorse for transport of personnel. Although increased traffic through Deadhorse seems likely, moving personnel by fixed wing aircraft may also impact other sites. Airports at Barter Island and Kavik may also experience more flights since these airports would place staff closer to the Refuge (although still not within the ARCP). In order to move these staff during the snow-free season to duty stations within the program area, some additional means of transportation would be needed. Airports and roads may need to be built within the ARCP, and/or thousands of helicopter flights might be needed, all of which may impact birds. Please consider changing this paragraph to, "All types of air traffic could disturb and displace both breeding and non-breeding birds. Air traffic would include fixed-wing aircraft into Deadhorse, Kavik, and Barter Island airports; helicopters to move people and supplies from airports to sites within the program area, and potentially fixed-wing aircraft traveling in the program area if new airports are built on the ARCP. Potential impacts on birds would be both short- and long-term."	The text has been revised for clarity. Discussion of air traffic noise is presented in Section 3.2.3, Acoustic Environment.

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162.	—	—	United States Fish and Wildlife Service	97942	157	Birds	Page 3-98, Paragraph 6: The statement "Vehicle and aircraft traffic and tall structures, including communication towers and drill rigs, pose collision hazards that could kill or injure birds" is incomplete. Transmission and guy wires are an equal or greater collision risk (Manville 2005). There are limited data to support the hypothesis that structure height is a significant predictor of collision risk in the treeless tundra ecosystem of the Arctic. Please change to, "Vehicle and aircraft traffic; structures, including communication towers and drill rigs; and wires pose collision hazards that could kill or injure breeding, staging, or migrating birds."	The particular hazard of guy wires is discussed in the following paragraph; there is no need to repeat it here. Manville 2005 is also cited already in that location.
163.	—	—	United States Fish and Wildlife Service	97942	158	Birds	Page 3-99, Paragraph 2: The statement, "Collisions with tall structures increase with tower height, bright lighting, and the presence of guy wires (Manville 2005; Gehring et al. 2011)" is incomplete. Perhaps the most important results in the citations provided is that risk of tower collisions is greatest when near wetlands or in migration corridors, but this is not included in the current text. Please change to, "Collisions with structures increase with height, bright lighting, guy wires, and when structures occur near wetlands or in migratory corridors (Manville 2005; Gehring et al. 2011)."	The text has been revised for clarity. The entire 1002 Area is technically wetlands and, by the citations provided and correctly interpreted by the commenter, at higher risk than many other areas around the world for collisions with infrastructure. No migratory corridors, in the sense of Manville and Gehring's reports, are present in the program area. However, a very important movement corridor occurs along the coastal lagoon system where little infrastructure is allowed. The STP is the major exception. See the rewrite discussion of movement corridors and high-value habitats, such as wetlands.

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164.	—	—	United States Fish and Wildlife Service	97942	159	Birds	Page 3-99, Paragraph 3: The statement, "Collisions would be expected to occur annually in small numbers, but mortalities could be serious if flocks of birds of conservation concern are involved" does not appear to be well supported. Collisions with towers are estimated to kill millions of birds annually (see Manville 2005). Please provide citations to support that collisions are expected to occur in small numbers, or change to, "Collisions are expected to occur annually and the number of birds likely injured or killed is unknown."	"Small numbers" has been changed to "unknown numbers."
165.	—	—	United States Fish and Wildlife Service	97942	160	Birds	Page 3-99, Paragraph 3: The following statement is unclear: "The potential impacts of collisions are short term, infrequent, and seasonal but would occur throughout the life of any development project and would be restricted to roads and facilities." The effects of collisions are often permanent and result in death. Frequency of collisions would depend on a host of factors including season, number of birds moving through an area, and weather. In some situations, dozens or more collisions occur in any given day. Collisions may also occur with aircraft anywhere in the program area. Please consider changing to, "Collisions would vary by season and occur throughout the life of any development project".	The text has been revised for clarity.

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166.	—	—	United States Fish and Wildlife Service	97942	161	Birds	Page 3-99, Paragraph 6: The following statement is incorrect: "Potential salt-water spills would not be toxic to birds but would likely kill vegetation in the spill zone and thus alter habitat." Many species of birds are not tolerant of ingestion of saltwater and others are not tolerant to its ingestion for extended periods or during certain parts of their life history. For example, despite their ecology, plovers and sandpipers lost weight when provided 0.3 M NaCl for drinking water, half the concentration of normal seawater (Purdue and Haines 1977). Even species that spend most of the lives at sea, like common eider, risk mortality if provided only saltwater during the brooding period (Devink et al. 2005). Please change to, "Potential salt-water spills would likely kill vegetation and invertebrates, and could be toxic to birds."	The text has been revised for clarity. References cited in the comment are not relevant and not incorporated.
167.	—	—	United States Fish and Wildlife Service	97942	162	Birds	Page 3-101, Paragraph 3: The statement, "Alternative B would occur over 1 percent of the entire program area. Potential disturbance and displacement of breeding birds in tundra habitats could occur over about 2 percent of the area available for leasing" may not completely describe the potential areas impacted if large portions of the 2000-acre footprint are linear features. Please consider changing to, "Alternative B would occur over 1 percent of the entire program area. Potential disturbance and displacement of breeding birds would depend on the orientation of the footprint and amount of linear features."	Linear features (i.e., roads) are the primary feature of the hypothetical development footprint; see Appendix F. Caveats for the hypothetical footprint are provided on page 3-95. The actual area depends entirely on the configuration of the roads. The text has been revised for clarity.

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168.	—	—	United States Fish and Wildlife Service	97942	163	Birds	Page 3-101, Paragraph 5: The following statement is inaccurate, "Fall staging snow geese are an important exception, as the area closed to leasing overlaps extensively with areas historically used by the largest numbers of fall staging snow geese in the program area." There are no areas closed to leasing in Alternative C. A substantial portion of area heavily used by snow geese in the 2000s occurs in areas with standard terms and conditions (Kendall 2006). Please change to, "Fall staging snow geese are an exception, as the area of NSO overlaps with many areas used by the large numbers of fall staging snow geese that use the program area (Kendall 2006)."	The text has been revised for clarity.
169.	—	—	United States Fish and Wildlife Service	97942	164	Birds	Page 3-101, Paragraph 7: The statement, "With Alternative C, potential long-term loss and alteration of habitat from direct and indirect effects of gravel deposition would be similar to Alternative B" is incomplete. An important feature of Alternative C, compared to B, is that more wetlands and moist tundra would be afforded protections through NSO along the coast and from increased buffers around those rivers most important to breeding waterbirds and shorebirds (e.g., see Brown et al. 2007). Please consider changing to, "With Alternative C, potential long-term loss and alteration of the most heavily used bird habitats (wetland and moist tundra) from direct and indirect effects of gravel deposition would be somewhat less than Alternative B (the entire area is available for leasing) and would occur over approximately 1 percent of the program area; disturbance and displacement could occur over about 2 percent or more of the program area."	The text has been rewritten to better address effects of NSO with Alternative C.

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170.	—	—	United States Fish and Wildlife Service	97942	165	Birds	Page 3-102, Paragraph 1: Oil spills in riverine, deltaic, and lagoon habitats has the greatest likelihood of high impact to waterbirds. For this reason, Alternative D that includes the highest setbacks from waterways for refueling operations and that maximizes no surface occupancy for these habitats, will provide some protections for migratory birds. Please update the text to reflect this information.	The text has been revised.
171.	—	—	United States Fish and Wildlife Service	97942	166	Birds	Page 3-102, Paragraph 2: The following statement is incomplete: "Alternative D includes some larger setbacks than Alternatives B or C for riparian areas and is, therefore, somewhat more protective of avian habitats in riparian areas." The larger river setbacks in Alternative D would also provide some protections for habitats adjacent to riparian areas, such as wetlands. Please consider changing to, "Alternative D includes some larger setbacks than Alternatives B or C for riparian areas and is, therefore, more protective of avian habitats in riparian areas and other important adjacent habitats such as wetlands."	The text has been revised to include potential wetlands and uplands that may occur in riparian buffers.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
172.	—	—	United States Fish and Wildlife Service	97942	167	Birds	Page 3-102, Paragraph 3: The following statement is incomplete: “however, the various NSO areas with Alternative D would be protective to many important avian habitats, including riparian and stream habitats, Canning River delta water bodies and wetlands, lagoon and barrier island habitats, and coastal habitats.” During the breeding season, shorebird, waterfowl, loon, and larid densities are highest in wetlands (Brown et al. 2007, Bart et al. 2012). Even lapland longspurs, the most abundant passerine in the ARCP, occur at somewhat higher densities in wetlands compared to drier sites (Bart et al. 2012). Within the ARCP, wetlands are generally most abundant along rivers and river buffers are largest for Alternative D. Therefore, Alternative D provides more NSO coverage of wetlands adjacent to rivers than Alternative B or C. Please change to, “however, the various NSO areas with Alternative D would be protective to the most important avian habitats, including riparian and stream habitats, Canning River delta water bodies and wetlands, lagoon and barrier island habitats, river deltas, wetlands associated with rivers and coastal habitats.”	The text has been revised to include non-riparian habitats within the riparian buffers.
173.	—	—	United States Fish and Wildlife Service	97942	168	Birds	Page 3-102, Paragraph 3: The following statement is incomplete: “All these no lease areas, NSO areas, and CSU areas would potentially reduce impacts on birds. As with Alternative C, nearly all of the area closed to leasing are in the area of low HCP and in inland and drier habitats.” No areas are closed to leasing in Alternative C. Please change to, “All these no lease areas, NSO areas, and CSU areas would likely reduce impacts on birds. Nearly all of the area closed to leasing is in the area of low HCP and in inland and drier habitats.”	The text has been revised.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
174.	—	—	United States Fish and Wildlife Service	97942	169	Birds	Page 3-102, Paragraph 6: The statement, "Under Alternative D, potential long-term loss and alteration of habitat from direct and indirect effects of gravel deposition would occur over approximately 1.6 percent of the area available for leasing (1,037,200 acres). Disturbance and displacement could occur over about 3 percent of the area available for leasing" is confusing and makes it difficult to compare potential impacts for the various Alternatives. Recommend deleting this paragraph or maintaining a consistent denominator (i.e., the program area) for all alternatives. Specifically, we recommend that the comparison be the percent of the project area, not the leased area that would be affected by each alternative. Another way to present this is the total number of acres potentially altered under each alternative. Either of these would provide a more accurate comparison across alternatives than the current approach.	If the entire 1002 Area is used as the denominator, there is no difference between alternatives. With greater NSO areas, these calculations accurately reflect that more facilities will be placed in a smaller area under Alternative D, with a potentially higher density of development. The text has been revised for clarity.
175.	—	—	United States Fish and Wildlife Service	97942	260	Birds	Page 2-30: Map references aerial observations as coming from "North Slope Eider aerial survey and Arctic Coastal Plain breeding waterbird aerial survey"; however, the point location to the northeast (Beaufort Lagoon) and in the northwest (Brownlow Point) are not within the sampled area of the aerial breeding surveys. Instead, the Brownlow Point observation came from the Common Eider breeding pair survey in 2000 (referenced in Maps 3-15 through 3-20). The eastern point in Map 3-14 (Beaufort Lagoon) is misplaced and should be near Demarcation Point, which is outside of the project area. Please correct the map as appropriate. The map should also indicate that the area in white was not sampled in the aerial breeding pair surveys.	According to GIS analysts, the map locations were not changed; data came from Michael Swaim, USFWS. A note was added to the legend information on data sources for the two locations mentioned. A note regarding unsurveyed areas was added to the legend information.

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176.	—	—	United States Fish and Wildlife Service	97942	261	Birds	Page 2-30: The upper panel of each of these maps should be labeled breeding survey, not post-breeding survey. The survey was timed for early incubation of common eiders. Birds observed during this survey may also include non-breeding or failed breeding birds.	Egg-laying and incubation occur after breeding. Few of the common eiders recorded were on nests, and most were post-breeding males. None of the other ducks or loons recorded nest in any numbers on the barrier islands. All likely were post-breeding males and smaller numbers of failed or non-breeding females, with the possible exception of red-throated loons that forage in the lagoons and nest on tundra ponds. As there is no perfect label that covers all maps for all species, the BLM has replaced the map titles with the dates of the surveys.
177.	Christy	Stebbins	—	97980	6	Birds	How is the Migratory Bird Treaty Act of 1918 going to be recognized and enforced? Some of the new conventions to the treaty stipulate protections not only for the birds themselves but also for the habitats necessary for their survival. This is a critical omission in this DEIS.	The MBTA is described on page D-4. Additional mention has been added to the avian section. Virtually all birds found in the planning area are migratory, share populations with other countries and often other continents, and are protected similarly by the MBTA. The MBTA has never been interpreted to protect habitat but attempts to prevent injury, mortality, and egg and nest loss.

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178.	Daniel	Suman	—	98022	3	Birds	See Draft Environmental Impact Statement at 3-92 ("Winter activities would affect few species and low numbers of year-round residents."; "Exploration occurs during winter and would have little direct effect on birds; indirect effects would occur only from ice roads and rolligon traffic on vegetation and terrain surfaces and impacts on habitat quality from water removal.") 2 See McCarter, 5.5., A.C.A. Rudy, and S.F. Lamoureux. 2017. Long-Term Landscape Impact of Petroleum Exploration, Melville Island, Canadian High Arctic, Arctic Science 3:730; Felix, N.A., and M.K. Reynolds. 1989. The Effects of Winter Seismic Trails on Tundra Vegetation in Northeastern Alaska, U.S.A., Arctic and Alpine Research 21:188; Kemper, J.T. and S.E. Macdonald. 2009. Effects of Contemporary Winter Seismic Exploration on Low Arctic Plant Communities and Permafrost, Arctic, Antarctic, and Alpine Research 41:228. * Felix, N.A. and M.K. Reynolds. 1989. The Effects of Winter Seismic Trails on Tundra Vegetation in Northeastern Alaska, U.S.A., Arctic and Alpine Research 21:188. 7 McCarter, 5.5., A.C.A. Rudy, and S.F. Lamoureux. 2017. Long-Term Landscape Impact of Petroleum Exploration, Melville Island, Canadian High Arctic, Arctic Science 3:730. * Ashenhurst, A.R. and S.J. Hannon. 2008. Effects of Seismic Lines on the Abundance of Breeding Birds in the Kendall Island Bird Sanctuary, Northwest Territories, Canada, Arctic 61:190.	The vegetation and bird sections have been revised to incorporate additional information regarding the effects of seismic exploration.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
179.	Susan	Culliney	—	98092	1	Birds	the EIS provides no maps of birds other than snow geese. The spatial data do exist to provide the public with the depiction of how birds use the coastal plain and how the development scenarios would impact them. This visual and spatial comparison is vital for the public and for the agency to understand and analyze the impacts.	Maps 3-14 through 3-19 all depict bird data for species other than snow geese.
180.	Susan	Culliney	—	98092	2	Birds	the EIS lacks basic scientific reference for many topics. For instance, in the four paragraphs on the impacts of oil spills on birds, this short section entirely lacks footnotes or any reference to scientific literature. There is an unfortunate abundance of scientific study of the impact of oil spills on birds, and the agency must look at and reference that information in its explanation of the impact. And this deficiency is seen throughout the EIS.	References regarding oil impacts on birds have been incorporated; other details are presented in Sections 3.2.11, Solid and Hazardous Waste and 3.2.6, Petroleum Resources.
181.	Brook	Brisson	Trustees for Alaska	98269	128	Birds	The [climate change] discussion in the Birds section (page 3-91) is brief, general, speculative and lacking in specificity for the many species involved.	Additional text has been incorporated to the discussion of climate change.
182.	Brook	Brisson	Trustees for Alaska	98270	165	Birds	The DEIS devotes a few sentences to the shipping-related disturbance and displacement of birds and their habitat, but these statements are very cursory and general. 1934 Additional analysis of shipping and icebreaking noise impacts on birds near the program area and along the marine shipping route should be included in a revised draft EIS.	Additional details on shipping have been incorporated into Chapter 2 and on impacts in Chapter 3. None of the development alternatives include associated icebreaking activities.

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183.	Brook	Brisson	Trustees for Alaska	98271	45	Birds	The DEIS fails to address the important data gaps related to the scientific understanding of Arctic Refuge Coastal Plain avifauna and the potential impacts of oil and gas development on birds. The data on bird species densities in the Coastal Plain area are broadly incomplete and existing, completed surveys are restricted in statistical power as a result of limited spatial scope and temporal scale. ⁹⁰¹ New, additional surveys should be designed specifically for the project being considered and should be a mandatory component of any robust environmental impact assessment. For breeding waterbirds specifically, there is a need to better understand those species' distributions and abundances within the Coastal Plain in relation to varying habitat types. ⁹⁰² Relatedly, while populations of Snow Goose and Black Brant appear to be increasing on the North Slope, ⁹⁰³ studies on any new resulting patterns in the distribution of these species during nesting and migratory staging have yet to be completed.	Appendix Q has been added to address incomplete or unavailable information per 40 CFR 1502.22.
184.	Brook	Brisson	Trustees for Alaska	98271	47	Birds	Finally, the issue of phenology, or migratory mismatch, is an area of needed study, particularly in the project area. While some migratory birds are displaying some plasticity to changing seasonal patterns, ⁹⁰⁶ it is not known how the shifts in resource availability or migratory timing will reverberate through a species' life history; nor is it known whether the flexibility seen in other parts of Alaska are applicable to the Coastal Plain of the Arctic Refuge. The agency must address these areas of missing information prior to moving ahead with a leasing program.	The comment is correct that the effects of climate change cannot be accurately predicted. No revisions were made in response to this comment.

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185.	Brook	Brisson	Trustees for Alaska	98271	51	Birds	The DEIS does not provide adequate descriptions and baseline information for the birds found within the Coastal Plain. Throughout the DEIS, the document appears to downplay the importance of birds with the status "uncommon." The FWS defines "uncommon" as "[o]ccurs regularly, but not always observed either because of lower abundance or secretive behaviors." Although a bird may be "uncommon" according to FWS, the species is still regular in the project area. For birds and other species that have regular but dispersed populations, there can be major biological significance for a smaller number of individuals, even if the numbers do not constitute high densities. The DEIS should not, therefore, dismiss "uncommon" bird species. Yet the DEIS seems to downplay uncommon birds, saying that "Many of the 156 species recorded are uncommon or rare."907 Elsewhere, the DEIS makes special note of birds that are "fairly common, common, or abundant," but does not include birds that are "uncommon"908 despite the fact that this means that they occur regularly. By overlooking the uncommon birds, the overall effect of these different interpretations is to downplay the importance of the project area for birds.	Status and abundance labels are derived from USFWS 2015, Appendix F. These labels are as accurate as possible, and no attempt has been made to downplay the importance of uncommon species. The lists provided here are more inclusive than those provided in the USFWS RCP (USFWS 2015b).
186.	Brook	Brisson	Trustees for Alaska	98271	52	Birds	The DEIS also does not always provide accurate names and citations for the bird species it purports to analyze. The DEIS is sloppy in the presentation of bird names, with incorrect names and typos (e.g. "red-neck phalarope;"909 "Calidris pugnaC;"910 "Gyrfaon," "Peregrine Faon," and indeed every "Fao" species in the Falco genus 911). These glaring errors underscore the rushed approach the agency took in developing this DEIS. The DEIS also	Typographical errors in scientific names of species have been corrected. The documents cited all are publicly available and accessible. Available data from 1982 to 2004 may (probably do) underestimate the numbers of snow geese that currently use the Refuge. The USFWS and BLM 2018 reference was a report created specifically in response to the Tax Act that opened the 1002 Area to leasing in 2017. It summarizes

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186. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	does not provide sufficient citation for the public to follow its logic or review its analysis. For instance, when describing populations and locations of Snow Geese, the DEIS references "USFWS and BLM 2018,"⁹¹² which appears to be an internal report entitled Rapid-Response Resource Assessments and Select References for the 1002 Area of the Arctic National Wildlife Refuge in Anticipation of an Oil and Gas Exploration, Leasing and Development Program, per the Tax Act of 2017, Title II Sec. 20001.913 The DEIS appears to be referring to a source that is a compilation of other select references. The DEIS should not cite to internal compilations, but instead should cite to original data and reports that the public may access and ensure that the primary reports are in fact publically accessible through the agency. Using inaccessible references deters the public from understanding how the agency came to its conclusions. Another example is that the DEIS cites to the "USFWS and BLM 2018" source to say "[u]p to 325,000 snow geese of the Western Arctic Population use the ARCP as a staging area for fall migration."⁹¹⁴ But later the DEIS says that "[a]s many as 325,760 snow geese have been documented using the ARCP, including the program area and east to the Canadian border, for several weeks..."⁹¹⁵ These two numbers are similar, but not the same, and it is possible that BLM is underestimating snow geese population. Without identifying the source of the information, the public is not able to check on the agency's analysis to discover which piece of data is correct.	much of the data used in this EIS. The RCCP is another summary document used heavily for this EIS and is the source of Map 3-20. Text has been modified for clarity.

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187.	Brook	Brisson	Trustees for Alaska	98271	53	Birds	In addition to providing inadequate and incomplete descriptions of birds, the DEIS does not adequately account for changes to bird habitat due to changes in phenology and coastal erosion. For example, the DEIS notes that "[w]aterbirds arrive in late May and June and begin nesting from late May through June," ⁹¹⁶ but does not provide any analysis of changes in phenology and its impacts. Broadly across the bird section, the DEIS lacks sufficient description and information on potential changes in phenology and the potential for resulting impacts. ⁹¹⁷ The DEIS also notes that coastal habitats may change due to erosion and thawing, but cites to older data ⁹¹⁸ that is better replaced with updated data from USGS. ⁹¹⁹	The discussion of climate change has been expanded, including changes in phenology and coastal erosion.
188.	Brook	Brisson	Trustees for Alaska	98271	54	Birds	The DEIS also fails to accurately describe the extent of impacts to bird habitat. The 2,000-acre "limit" that allows reclamation to exceed the cap will cause more than 2,000-acres of impacts to birds. The DEIS explains that the agency would allow the 2,000-acre "cap" to be exceeded if disturbed acres are "reclaimed." ⁹²⁰ We question whether areas can be effectively reclaimed following oil and gas development. Regardless, shorebirds and passerines do not use reclaimed acres in the same way they use non-disturbed areas. ⁹²¹ Furthermore, the DEIS itself notes that "[h]abitat alteration caused by fugitive dust, thermokarsting, and water impoundments intensifies with time," ⁹²² without explaining how remediation will undo these indirect impacts. Therefore, the DEIS must explain that the impacts to birds would go above and beyond the 2,000 acres, and must address how this impact exceeding 2,000 acres conforms with the law.	It is correct that direct impacts of habitat loss on birds will exceed 2,000 acres and that indirect impacts will greatly exceed 2,000 acres. It is also correct that reclamation is unlikely to restore original wildlife values and that most habitat alteration will be permanent. The text has been revised for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
189.	Brook	Brisson	Trustees for Alaska	98271	74	Birds	The DEIS does not adequately describe the passerine bird guild in the project area. The DEIS notes that "passerines are the most abundant guilds of nesting birds on the ACP," ⁹⁵³ and that "landbirds on the ARCP include a diversity of species that are strongly dominated in abundance by passerines and ptarmigan." ⁹⁵⁴ But the DEIS does not go further to describe what habitat types the different species of passerines are using, does not describe which passerines are species of concern, and does not provide a life history for those species of concern.	Species of concern are identified in Table J-9; this paragraph summarizes conservation status. Habitat associations for Lapland longspurs, by far the most abundant passerine, are described on page 3-91. Available habitat mapping is not appropriate for more detailed analyses of bird distributions, and habitat associations across the 1002 Area are poorly understood, particularly for uncommon species. The text has been revised to say, "Currently, only low resolution vegetation and habitat mapping data for the area are available and habitat associations of birds in the area are poorly understood."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
190.	Brook	Brisson	Trustees for Alaska	98271	80	Birds	The DEIS analysis of oil spill impacts on birds is inadequate, incomplete, and lacks reference to studies or articles. First, the bird impacts section in the DEIS ignores relevant spill data. Within the four paragraphs on spills of oil and other contaminants in the bird section, the DEIS references Section 3.2.11 on Solid and Hazardous Waste.⁹⁶² This section references Appendix I, which contains only spill data for "Areas near Kaktovik, Alaska."⁹⁶³ The area near Kaktovik and within the Arctic Refuge is an inappropriate source for data on oil spills when analyzing the impacts of an oil and gas program on birds. The relevant data are from the entire North Slope, particularly the industrial area to the west, including Prudhoe Bay, state and corporate land, and the National Petroleum Reserve-Alaska. The agency must amend its oil spill table to include oil spill data from these areas. When the DEIS presents these more relevant data, it will become more apparent that the DEIS's supposition that spills of 10,000 gallons are extremely rare,⁹⁶⁴ is wrong. There have been more than 16 spills of over 10,000 gallons of various toxic materials in the last 19 years, including a spill of over 200,000 gallons of crude by BP in 2006.⁹⁶⁵ Presentation of this data is also necessary to test the DEIS's conclusion that small spills on land will be "short term and of several acres" because these types of spills "are usually contained on gravel pads and roads."⁹⁶⁶ Without these or other data, the DEIS does not have an adequate basis to make these conclusions.	The discussion of the spill history in the NPR-A appears in Section 3.2.6 (page3-38), and a history of North Slope spills appears in Section 3.2.11 (pages 3-62 to 3-64). Additional references to oil spill impacts on birds have been incorporated.

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191.	Brook	Brisson	Trustees for Alaska	98271	82	Birds	Second, the DEIS does not conduct a cumulative impacts analysis of oil spills on birds across the North Slope. Using up-to-date spill data from the North Slope, the agency could estimate the cumulative spills, how industrial activity under the different alternatives could add to spill impacts, and whether any bird species may be particularly impacted. The proposed development only increases the odds that the North Slope and its biological landscape will experience a major spill, with inadequate response capabilities. However, the DEIS fails to conduct this analysis.	The bird section has been expanded to include references regarding impacts of oil spills on birds. Details regarding spill histories are presented in Section 3.2.11. Species affected would depend entirely on the location of any spill, but the EIS correctly states that large spills could affect large numbers of birds.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	Brook	Brisson	Trustees for Alaska	98271	84	Birds	Fourth, the DEIS does not explain or analyze where oil spills may occur, and therefore which bird species are likely to be most impacted. An oil spill in nearshore waters could be devastating to waterfowl, particularly molting and flightless Long-tailed Ducks, coastal staging shorebirds, and gulls. The DEIS does not analyze the likelihood of oil spills against the reasonably foreseeable development scenario, nor against the different alternatives, nor with any modeled scenarios. Instead, the DEIS analyzes spills generally, without spatial information. The DEIS says that larger spills "could reach streams or lakes" ⁹⁷¹ but provides no trajectory, directionality, or estimation of where and how far this impact could occur. The DEIS posits that "containment at strategic points on waterways would likely keep oil from flowing downstream into lagoons" ⁹⁷² but does not explain where this would occur. The DEIS mentions the potential for spills in docking areas or along shipping lanes, but does not provide more specificity that would allow for further analysis on bird and habitat impacts. The DEIS also notes that the cleanup of large spills "could pose contamination risk to large numbers of molting, feeding, or migrating birds," ⁹⁷³ but does not explain where the spill or the cleanup could occur.	Text regarding potential impacts from spills has been modified. It cannot be predicted where and when spills will occur. Greater specificity is not possible. Spill risks do not differ among alternatives. The description of spills is presented in Section 3.2.11.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
193.	Brook	Brisson	Trustees for Alaska	98271	86	Birds	The DEIS does not contain an adequate cumulative impacts analysis for birds. The sections below describe inadequate cumulative impacts analysis for specific birds and guilds, but more generally the "Cumulative Impacts" section within the "Birds" section of the DEIS976 is wholly inadequate. This small section essentially consists of an incomplete list of the individual indirect or direct impacts. The list includes increased predation, terrestrial transportation activities, boat and air traffic disturbance, subsistence harvest of birds, recreation, air-based sightseeing, adventure cruise ships, and community development projects. But the list of impacts misses impacts like seismic activity's effects to hydrology and oil spills; the list also completely misses impacts from beyond the project area including melting sea ice; marine boat traffic impacts to marine birds along the marine traffic route; and impacts to migratory birds in other parts of their life history, at stop-over and wintering habitat. The list is also too vague, and does not expand upon the impacts of barge and boat traffic to mention the effects from screeding.	The cumulative effects section has been revised to provide more information. The effects of climate change are discussed separately under that heading. An increased risk of spills, including the marine transport route, was incorporated, as suggested. Transboundary impacts have been incorporated as a separate section. Screeding is covered as an indirect effect of the leasing action and would not be a cumulative effect unless additional screeding were conducted for other hypothetical development scenario actions. Although not mentioned specifically, screeding would be included among potential actions associated with community development projects, such as improvement of ports, which are listed in the hypothetical development scenario.
194.	Brook	Brisson	Trustees for Alaska	98271	87	Birds	In addition to missing many of the individual impacts that can accumulate or become exacerbated, the cumulative impacts section simply does not analyze these impacts as accumulating or exacerbating. The section both misses habitat loss from infrastructure as an impact and furthermore entirely lacks any accounting of the accumulating infrastructure on the North Slope, including activity in land owned by private corporations or by the State of Alaska, and activity in the National Petroleum Reserve-Alaska in the western Arctic.	The cumulative effects discussion has been expanded.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
195.	Brook	Brisson	Trustees for Alaska	98271	89	Birds	The analysis of the impacts to cliff-nesting raptors is inadequate. The DEIS describes development activity that would remove gravel from rivers ⁹⁸⁰ and explains the action alternatives would remove gravel and sand from "alluvial deposits of larger rivers" and "streams and topographic high points." ⁹⁸¹ Within Appendix A, the reasonably foreseeable development scenario includes a section on gravel mines but does not provide more specificity, noting that gravel pits will likely occur near the facilities they are supplying. ⁹⁸² But the section on birds does not use this information to explain where gravel mining may overlap with cliff-nesting raptor habitat, thus limiting the analysis on the extent of this impact. The DEIS therefore does not specify where removal of gravel from rivers will occur under the reasonably foreseeable development scenario and under the different alternatives, and therefore does not adequately assess the impact to cliff-nesting raptors.	Locations of gravel mines are not known but will be determined during the permitting process for any proposed development project. The potential impacts on raptors will be assessed at that time.
196.	Brook	Brisson	Trustees for Alaska	98271	94	Birds	None of these mitigation measures are included in the DEIS's analysis of impacts to cliff-nesting raptors. Nor does the DEIS analyze the varying levels of impacts to cliff-nesting raptors under the different alternatives.	Because facility locations are unknown, more detail on potential impacts on specific cliff-nesting areas cannot be provided. Text has been added, where appropriate, describing differences among the alternatives, specifically riparian setbacks, which may protect cliff-nesting habitats.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
197.	Brook	Brisson	Trustees for Alaska	98271	95	Birds	The DEIS fails to analyze where and how winter activity could impact American Dippers or other winter birds in the program area. The DEIS notes that winter birds remain in the program area year-round, including "dippers near open running water."990 Appendix J indicates that wintering birds are not rare (American Dippers are uncommon, meaning regular but not always observed; Willow Ptarmigan are uncommon; and Rock Ptarmigan are common).991 Later, the DEIS mentions that "[t]raffic and machinery related to winter construction could cause disturbance, behavior alterations, and displacement to resident wintering birds."992 But the DEIS does not go on to mention American Dippers or other wintering birds in the short section on "Landbirds."993 There are no lease stipulations or ROPs related to the issue of winter activity impacts on American Dippers or other overwintering birds.994 Without a basis for its conclusions, the DEIS simply states that development activity would "affect few species and low numbers of year-round residents."995 and that "only small numbers of only a few bird species are resident during winter, and none are breeding. Winter construction therefore would potentially affect small numbers of non-breeding birds during the construction phase of a development project."996 This constitutes insufficient actual analysis of impacts to wintering birds from industrial winter activity.	A specific mention of dippers has been added to the section on year-round resident landbirds. Notwithstanding the presence of dippers, the EIS is accurate in stating that small numbers of birds would be affected by winter activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
198.	Brook	Brisson	Trustees for Alaska	98271	97	Birds	The DEIS does not adequately analyze or mitigate the impacts to shorebird habitat from winter work and the subsequent shifts in hydrology. The DEIS briefly notes that winter activities, such as seismic machinery and ice roads, can harm vegetation and change spring runoff, and that more damage occurs in well-drained areas of the tundra, which are areas favored by some shorebirds like Whimbrel and American Golden-plover. ¹⁰⁰⁰ But the DEIS never takes the next step to make the connection to shorebirds or their natural history. Nor does the DEIS connect the dots to explain that most of the high oil potential area in Coastal Plain is comprised of that habitat type. While the Canning River and Sadlerochit River have patchy wetlands, the rest of the high oil potential area is comprised of well-drained tundra, which provides habitat for shorebirds like American Golden-plover	Seismic activity may noticeably affect vegetation and microtopography. Additional text has been incorporated into the vegetation and bird sections regarding the effects of seismic exploration.
199.	Brook	Brisson	Trustees for Alaska	98271	104	Birds	Second, the DEIS further downplays the impacts of screeding on birds and their food web. The DEIS notes that screeding will cause a "sediment plume that could disrupt feeding by non-breeding, post-breeding, and staging birds." ¹⁰²² But the DEIS dismisses this as "short-term" and does not acknowledge that a sediment plume could present long-term impact of disrupting the food web. Moreover, the analysis completely lacks any mention of climate change and whether habitat impacts from screeding will be exacerbated by climate-change-induced erosion.	Revisions have been made to the description of screeding impacts; however, screeding will be short term and localized, as correctly described in the EIS. It will be unlikely to interact with climate change-induced coastal erosion except locally. See Section 3.2.4, Physiography (page 3-26).

S.3.6 Climate and Meteorology

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Donald	Walker	—	68	30	Climate and Meteorology	Consistent, continuous, accurate records are needed for the 1002 Area. The only additional snow information available comes from the public data produced by the weather stations operated by the USGS,³⁰ where wind speed and local snow depth have been collected by autonomous instruments. Unfortunately, no overlap exists between the older weather records and new data being collected by the USGS at its three climate monitoring stations in the Arctic National Wildlife Refuge, hence identifying any recent trends in snow depth is not possible, though the data still indicate a similar level of variability. This difficulty highlights the need for long-term field-based monitoring of basic climatic parameters including snow depth. While sonic depth-sounder measurements (which record depth rather than snow-water equivalent) offer an inexpensive way to monitor the snow, unshielded gauges like these are notoriously inaccurate and can report a station as a drift one year and a scour zone the next. Some recent papers have suggested that with the reduction in Arctic Ocean sea ice, there should be an increase in October-December precipitation^{31,32,33} but other predictions are that the increased precipitation will fall mainly as rain.³⁴ What we do know about snow in the 1002 Area is that it is generally thin (<50 cm) with large areas of wind-scour with even less snow in mid-winter and large drifts 2-5 m deep along the banks of the incised streams and rivers. The spatial distribution of the snow cover reflects the power of the wind in this region. A	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. That being said, the state does require specific parameters for winter tundra travel. These requirements will apply to travel in the 1002 Area for any winter exploration activities. On-site snow measurements are planned to ensure that the snow level meets minimum requirements for depth and density.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	photogrammetrically produced snow-depth map from April 2018, made by subtracting a digital elevation model (DEM) of the summer ground surface from a winter snow surface³⁵, demonstrates the range of snow depths (Fig. 9) and the lack of sufficient snow cover for the proposed seismic work. The map was created in April 2018 using methods described here at a nearby location showing similar results and validated using ground measurements of snow depth collected within that study area. When examining the map, it is important to note that the all-time deepest snow recorded for the area occurred in 2018, yet vast areas of this study area were snow free in 2018 and even larger areas had less snow than the current Alaska Division of Natural Resources (ADNR) permit guidelines of 23 cm (9 in) for any off-road vehicle travel over snow in state-owned North Slope foothills. From the map, it is apparent that drifts in excess of 100 cm depth (blue) are found immediately adjacent to scoured areas where the snow depth is less than 25 cm deep (red and orange). In fact, it is best to think of these thin and thick areas of snow as conjugates, produced by wind removing snow from large areas of tundra and depositing it in much smaller areas of riparian zones.	(see above)

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Donald	Walker	—	68	32	Climate and Meteorology	While an in-depth analysis of winter wind speeds in the 1002 Area has not been done, there is a common understanding that blizzard winds are stronger in this eastern part of the North Slope than farther west in the NPR-A. Currently, we lack comprehensive records of where scour and drift are most or least intense, and we have little information on how often excessive scour takes place in winter and how widespread it is when it does occur, nor how a variety of snow-related factors may be affected by rapid climate change. (See Section 2.7 for discussion of vegetation-snow relationships and the depth of snow needed to protect the tundra.) We do know that areas such as those shown in Figs. 9 and 10 are not unique within the 1002 Area and that even in high-snow years there is simply no way a 200 m x 200 m grid of trails can be established to avoid zones with too little snow to protect the tundra. Figure 10 was photographed in April of 2017, a year with less snow and more wind than 2018. The view is northeast from the Hulahula River across the 1002 Area. It is evident that 9 inches (23 cm) of snow does not exist in most of the field of view, nor is there a route through this area with snow sufficient to meet the minimum requirement for any over-snow vehicle operation in state-owned Arctic Foothills.³⁸ Even in the heavy snow year of 2018, the 9-inch minimum was not met over large parts of the mapped area (orange areas in Fig. 9). Spatial snow distribution studies are needed to clarify the extent and frequency of snow scour in the 1002 Area.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. That being said, the state does require specific parameters for winter tundra travel. These requirements will apply to travel in the 1002 Area for any winter exploration activities. On-site snow measurements are planned to ensure that the snow level meets minimum requirements for depth and density.

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3.	Donald	Walker	—	68	45	Climate and Meteorology	In recent years, ice-wedge thermokarst has become much more widespread in undisturbed tundra landscapes across the circumpolar Arctic that correspond to recent increases in permafrost temperatures. ⁶¹ Ice-wedge degradation with flooded thaw pits became common after about 1990 in the central and eastern parts of the North Slope, and is also seen in the landscapes of the 1002 Area (Fig. 13). Ice-wedge degradation started earlier in portions of the Arctic Coastal Plain west of the Colville River. ⁶² The likely reasons for the differences in the timing of the onset of widespread ice-wedge degradation include differences in ground-ice content, regional climate gradients from west (maritime) to east (continental), and regional differences in the timing and magnitude of extreme warm summers after the Little Ice Age. At present, it is not known how future seismic activities will affect these regional thermokarst patterns, but it can be assumed that the landscapes will be much more heterogeneous than they were during the 1980s and that ice wedges will be more sensitive to degradation.	If the increase in permafrost melting has happened to a greater degree farther west, then the Coastal Plain leasing area should be less risky to develop than other projects already being developed and in production to the west. If such changes to the west were already making the developments there unfeasible, companies would not continue to expand production in those areas.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Donald	Walker	—	68	120	Climate and Meteorology	Figure 12. Ice wedge at the Beaufort Sea coast, northern Alaska. Wedge ice is one of the most common forms of massive ground ice in permafrost, which is responsible for the prominent ice-wedge polygons visible in aerial photographs of the region. Good examples of ice-wedge polygons are visible in Figures 3, 4, 7, and 13. This ice wedge is approximately 4 m deep and over 5 m wide at the top. A warming climate is causing loss of ice at the top surface of ice wedges on most upland surfaces of the 1002 Area, resulting in thermokarst pits such as those shown in Figure 13. Disturbance to the microtopography and vegetation mat can exacerbate thermokarst and lead to thermal erosion, greater loss of ice, and major landscape changes. ⁵⁰	If the increase in permafrost melting has happened to a greater degree farther west, then the Coastal Plain leasing area should be less risky to develop than other projects already being developed and in production to the west. If such changes to the west were already making the developments there unfeasible, companies would not continue to expand production in those areas.
5.	Catherine	Carter	—	4989	1	Climate and Meteorology	you might at least consider the ANWR's role in sequestering carbon. Carbon emissions--as I think you know, no matter what you pretend to believe in public--are warming our planet drastically	The Draft EIS analyzes the potential GHG emissions resulting from development, thereby accounting for the de-sequestration of a portion of the carbon stored in Coastal Plain sediments.
6.	Sharon	Radulov	—	12021	1	Climate and Meteorology	The staggering amount of increased carbon pollution should not be ignored. The Center for American Progress has estimated that 62 million metric tons of CO2 equivalent would be released into the atmosphere from the oil that the DEIS has predicted to spill.	A 2013 study for BOEM (OCS Study BOEM 2013-205; see Figure 4-6) showed that the total volume of oil spilled on the North Slope represented on the order of 0.0002 percent of total production, so the Center for American Progress value, if correctly cited by the commenter, would be 4 to 5 orders of magnitude higher than actual data indicate. As such, the estimate from the cited study has not been incorporated into the analysis.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Lester	Lubetkin	—	18452	1	Climate and Meteorology	While the DEIS recognizes that the public raised the concern about the indirect and cumulative impacts associated with the burning of the fossil fuels proposed for leasing (and subsequent potential development), the analysis does not adequately provide sufficient information to the decision maker nor the public to fully understand the possible impacts. By showing the percentage change at the National and Global scale, it minimizes the impact, while the science is showing that any increase is detrimental and going in the wrong direction (see the recent IPCC studies and other Climate Change scientific assessments). The EIS should be clearer in displaying these indirect impacts.	The state of the science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions. "In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible" (IPCC Third Assessment Report [2001], Section 14.2.2.2, p. 774).
8.	James	Warren	—	18479	1	Climate and Meteorology	I raise the question of scope and scale regarding climate change. This relates to how a EIS is to be framed. In the case of the present Draft EIS, I think the framing is much too limited, to the detriment of the analysis and the conclusions drawn in the document. This is a matter of argumentation, but it is of specific import regarding climate change, a global problem we cannot address merely with local scales and scoping.	The scale and scope of climate and GHG analyses have been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute the global climate consequences to a single project.
9.	James	Warren	—	18479	4	Climate and Meteorology	In many parts of the Draft EIS, the writers address the question of direct and indirect impacts on the Arctic Refuge, and nearly every time they use a set of formulaic statements to limit the assessment of those impacts. For example, in Section 3, the writers address the question of climate. There are problems with the analysis in other ways, particularly in the scope of the analysis, but here is the main logical problem, as the analysis concludes concerning "Local and Global Direct and Indirect Impacts": "Issuance of oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provides context for decision makers and the public.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	would have no direct impacts on the environment because by itself a lease does not authorize any on the ground oil and gas activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to further environmental review and reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease. The impacts of such future exploration and development activities that may occur because of the issuance of leases are considered potential indirect impacts of leasing. Such post-lease activities could include seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Therefore, the analysis is of potential direct, indirect, and cumulative impacts on the climate from on-the-ground post-lease activities." The problem lies in the first clause. Direct impacts are only measured in terms of a lease, but the post-lease activities are not "potential indirect impacts of leasing." They will be direct consequences of the decision to lease certain acres. The use of "potential indirect impacts" is a red herring, an attempt to air-brush the actual consequences of these decisions. Disingenuous writing and thinking do not help us arrive at proper decisions. The other problems with the analysis of impacts come in terms of scope and scale. In Section 3, for example, the indirect impacts on climate are analyzed in such a way as to minimize the effects of the leasing. After all, the Draft EIS implies, these percentages of oil and gas being developed in this area are so small! How can this have a huge effect on the climate? But we know that climate effects are cumulative, and we know very well that the IPCC report and the recent National Assessment and the	(see above)

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Arctic Region Report all show that we are facing an enormous challenge to halt all oil and gas production as soon as possible.	(see above)
10.	Ehrick	Costello	—	21391	1	Climate and Meteorology	My second issue is that the synergistic effects of climate change and development aren't addressed here, although they are well documented in the scientific literature. I'd like to see at least some recognition that the potential effects described here will have interplay with effects from climate change and reduce the adaptability of endemic species as their habitat changes.	Page 3-4 of the Draft EIS describes changes in climate over the prior three decades, including regional warming on the North Slope. The extent that regional warming is affecting or may continue to affect the adaptability of endemic species is addressed in the wildlife-related sections of the Draft EIS (in the Climate Change subsections of the wildlife-related Affected Environment sections).

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	F	Chapin	—	29337	3	Climate and Meteorology	The EIS does not consider the ways in which these responses to climate change will make the permafrost, hydrology, and ecology of the region more sensitive to human disturbance. Thus, the impacts of oil and gas development will likely be much more pronounced than they may have been in earlier times when the climate was cooler. This will increase the cumulative extensive effects of oil development to a greater degree than is conveyed in the EIS as written. There is extensive research that has been done on effects of climate change on Alaska's north slope permafrost, hydrology, and ecology. The EIS has not adequately drawn on this research to assess the possibility of threshold changes that development might cause in the ANWR coastal plain. The EIS also fails to consider the impact of oil development in ANWR on the climate system, both by the extraction and burning of fossil fuels and by the increase in carbon dioxide and methane emissions that result from the extensive impacts of disturbance. There is considerable research on the causes of these changes in ecosystem carbon fluxes that could be incorporated into the EIS.	The North Slope has already undergone over 40 years of significant warming, which has measurably affected permafrost and ecology as indicated in the Draft EIS. However, the substantial oil and gas development ongoing on the North Slope during that time has not resulted in major impacts on landscapes over this period. Where appropriate, the potential effects of climate change on permafrost, hydrology, soils, and ecology are addressed in other sections of the Draft EIS and Final EIS (in the Climate Change subsections of the relevant Affected Environment sections).
12.	Craig	Mishler	—	31305	2	Climate and Meteorology	The draft EIS does not address the changing climate, or its definitive and devastating impacts on Arctic communities. The Arctic is warming at more than double the rate of the rest of the country, with dozens of Alaska villages in need of relocation. The draft EIS fails to assess how expanding fossil fuel development in the coastal plain would increase the social, cultural, economic and public health hardships born by Arctic communities due to climate change.	The Draft EIS and referenced documents do explain the changes in climate that have occurred on the North Slope in recent decades. The effects of expanding fossil fuel development on socioeconomic factors affecting Arctic communities are addressed in the socioeconomic section of the Draft EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Withheld	Withheld	—	55209	7	Climate and Meteorology	The draft EIS also underestimates carbon emissions that would result from drilling the Arctic Refuge because it does not account for burning all of the oil projected to be extracted. It does not assess how expanding oil and gas development in the Refuge will further exacerbate climate adaptation and mitigation challenges in the Arctic	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
14.	Withheld	Withheld	—	55252	2	Climate and Meteorology	Climate Change is Inadequately Addressed. The most glaring and inexcusable omission in the DEIS is a meaningful analysis about the impacts of climate change on the proposed leasing program. Notably, and symbolically, "climate change" is not even defined at the end of Volume I, in The Glossary. Given the extremely well documented impacts of climate change on the arctic, including diminishing Arctic sea ice, increasing temperatures, substantial coastal erosion, extensive permafrost warming and melting, vegetation changes, modifications to surface water, impacts on fish and wildlife and more, it is essential -- in order to comply with NEPA and CEQ's regulations -- to include this information in the Final EIS.	Section 3.2.1 of the Draft EIS discusses the impacts of climate change on potential development, specifically that warming temperatures in the North Slope region will make development more difficult by limiting the seasonal duration of heavy truck movement to periods when the surface is frozen. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the respective Climate Change subsections of the Affected Environment. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Robert	Burgess	—	55298	5	Climate and Meteorology	Climate Change is not addressed to any meaningful degree in the DEIS. Boreal and arctic regions are disproportionately affected by climate change	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
16.	Owen	Wozniak	—	55392	1	Climate and Meteorology	it appears that nowhere in the Draft EIS did the authors review or even note the recent Fourth National Climate Assessment, which clearly outlines in great detail the urgent need to reduce GHG emissions and undertake activities to mitigate climate change.	For a description of climate trends in the Arctic and on the North Slope, the reader is referred to Section 3.2.3.1 of the Greater Mooses Tooth 2 (GMT2) Development Project Final Supplemental Environmental Impact Statement (GMT2 Final SEIS), issued in August 2018 (BLM 2018a). These trends have been confirmed in the Fourth National Climate Assessment's Alaska Chapter (Markon et al. 2018), including that Alaska has been warming twice as fast as the global average since the middle of the twentieth century.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Dave	Gordon	—	55523	2	Climate and Meteorology	The document needs to address how development in this remote area will further exacerbate climate change.	Section 3.2.1 of the Draft EIS discloses potential direct and indirect GHG emissions associated with oil and gas-related activities on the Coastal Plain. The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project. The state of the science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions on specific areas.
18.	Withheld	Withheld	—	56330	1	Climate and Meteorology	I find it to be a glaring omission that climate effects of burning all the oil and gas up there are not mentioned at all in the potential effects list in the executive summary. This is unacceptable and needs to be revised so that a better informed decision can be made about arctic drilling.	The executive summary of an EIS discloses the resources identified as having potentially significant impacts. With respect to climate change, the proposed action is not expected to have significant impacts.
19.	Richard	Sumner	—	56477	5	Climate and Meteorology	The DEIS does not quantify or otherwise proportionally scale the current and future effects of climate change on the environmental resources of the Coastal Plain, and how the effects will influence the magnitude of environmental harm and amount of mitigation opportunity that can be attributed to each of the leasing program alternatives. Generally worded and repeated cursory text in the DEIS about the general consequences of climate change is insufficient (e.g., 'The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential direct and indirect impacts').	A general description of potential climate change effects on the project area is all that is possible based on current scientific understanding. Climate predictions and their effects on the Coastal Plain natural resources and potential human infrastructure, due to the proposed action, cannot be quantitatively assessed. However, the Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Nancy	Waterman	—	56488	4	Climate and Meteorology	Climate change impacts must be analyzed in the EIS. This includes the contribution of the proposed actions to climate change from emissions on site and potential emissions from oil and gas once shipped out of state, processed, and burned as fuel. The analysis also has to account for how the Coastal Plain is being impacted by climate change as well.	A general description of potential climate change effects on the project area is all that is possible based on current scientific understanding. Climate predictions and their effects on the Coastal Plain natural resources and potential human infrastructure, due to the proposed action, cannot be quantitatively assessed. However, the Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
21.	Randy	Oliver	—	56583	5	Climate and Meteorology	Any potential effects of post-lease oil and gas activities on meteorological conditions would be on a very small scale (microscale) and would cover very small portions of the program area, for example, such as a decrease in localized wind speeds and the creation of snowdrifts immediately downwind of structures; therefore, impacts on meteorological conditions are not addressed further in this section. Do you have supportive data for the above assumption?	Examples of microscale conditions include the presence of snowdrifts in areas where a building or terrain obstructs wind flow, resulting in snowdrifts in regions that experience snow accumulation along with strong winds.
22.	Peter	Landres	—	56598	5	Climate and Meteorology	5) long term impacts of regional climate disruption on soils, plants, animals, and Gwich'in culture from the CO ₂ and methane emissions from the construction and extraction of this oil and gas;	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Peter	Landres	—	56598	6	Climate and Meteorology	6) impacts of the C02 and methane emissions on the warming of permafrost and subsequent C02 and methane emissions from decomposing organic material in the soil;	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
24.	Thomas	Turiano	—	56599	5	Climate and Meteorology	5. There is no analysis of how development of 1002 will contribute to climate change.	Section 3.2.1 of the Draft EIS analyzes the increase in GHG emissions, and compares it with state, national, and global totals. The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project. The state of the science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Withheld	Withheld	—	57179	2	Climate and Meteorology	Further, the EIS does not address the impact of oil production on the acceleration of climate warming, including coastal erosion, melting permafrost, and the loss of Arctic communities.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
26.	Joan	Norberg	Yukon Conservation Society	57318	8	Climate and Meteorology	YCS respectfully recommends that the next iteration of the DEIS refer to the climate and social impacts of fossil fuel production directly and indirectly associated with development in the 1002 lands.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Jed	Fuhrman	—	57367	1	Climate and Meteorology	The impacts are clearly understated in the document, and ignore the massive U.S. and global impacts and costs of continued high levels of fossil fuel burning that this drilling would support.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
28.	Charlotte	Basham	—	58396	7	Climate and Meteorology	The DEIS needs to make a clear assessment on how oil and gas development in the Refuge will further exacerbate climate change. For example, how many metric tons of emissions will there be ? Your figure underestimated the effects because it did not account for all the infrastructure and downstream use of the oil.	Section 3.2.1 of the Draft EIS provided an accounting of both direct GHG emissions from the phases of development and the indirect impacts from downstream combustion of recovered oil and gas. Pages 3-7 and 3-8 of the Draft EIS describe emissions from the incremental downstream use of the oil and gas production.
29.	Withheld	Withheld	—	59352	1	Climate and Meteorology	I am not satisfied that the DEIS correctly describes the increases in atmospheric carbon dioxide levels that would result from proceeding with oil leasing and development activities in the Arctic Refuge.	Given the potential production-related GHG emissions represent a tiny fraction of global CO2 emissions, the increase in atmospheric CO2 levels due to the proposed action would be small.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Withheld	Withheld	NatureConnect NW	59676	1	Climate and Meteorology	The 2018 IPCC Report speaks to the lack of deep investigation in this plan: from page 2: "The report finds that limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO2) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050. This means that any remaining emissions would need to be balanced by removing CO2 from the air. "Limiting warming to 1.5°C is possible within the laws of chemistry and physics but doing so would require unprecedented changes," said Jim Skea, Co-Chair of IPCC Working Group III."n This reality, in the USA and globally, is not addressed in the Coastal Plain Oil and Gas Leasing Program. What mitigation is being considered for the CO2 rise? What impact will continued melt have on the project? And on the aftermath of what remains when the resources of this drilling and pumping location is complete? What future do the inhabitants, human, animal and vegetative, have after extraction?	The IPCC has recently relied on global climate models that have grossly overestimated the amount of warming (based on actual observations) from a given amount of GHG emissions (Christy 2015). Despite recent IPCC claims, the state of the science is not capable of predicting whether there will be detrimental impacts from specified amounts of GHG emissions. The IPCC has previously stated, "In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible" (IPCC Third Assessment Report [2001], Section 14.2.2.2, page 774).

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Grant	Barnard	—	64449	1	Climate and Meteorology	What is the impact of drilling on the local and global climate?	Local climate effects of drilling will be unmeasurable, except in the microclimate immediately adjacent to (within tens of feet of) heat sources. Regarding global climate, the Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Elizabeth	Dobbins	—	67482	2	Climate and Meteorology	Section on sea ice is misleading. It is not recovering. Extent in a certain month may not be the absolute lowest, but the trend is downward and getting thinner.	Arctic sea ice has changed greatly due to natural variations over time. It was reported in numerous media articles in the early 1900s to be decreasing and at low points compared with prior observations. This was well before major amounts of industrial GHG emissions. The Arctic ice then built up again during the 1940s to the 1970s, when many climate scientists claimed we were entering a new ice age. This ice buildup was despite a major increase in GHG emissions during this period. The subsequent decline in Arctic ice since the late 1970s has been blamed by some on GHG emissions, but that cause is not proven, given there were major declines in earlier eras when there was little or no industrial scale GHG emitted. The slight recovery in recent years highlights the fact that there is significant natural variability, and that the Arctic sea ice may be stabilizing as opposed to continuing to decline.
33.	Laura	Herman	—	67494	2	Climate and Meteorology	The EIS must include the full impact of lease sales including impact in parts per million and global warming.	Text has been added to the Climate and Meteorology section of the Final EIS (Section 3.2.1) to describe the estimated impact of the development on atmospheric CO2 levels.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Jenny	Rowland-Shea	Center for American Progress	67555	4	Climate and Meteorology	Misleadingly, the analysis only calculates the fractional GHG emissions from the consumption and combustion of oil that would result from the net increase in oil demand that the analysis predicts would result from Arctic Refuge production. As a result, the Trump administration's analysis suggests that the indirect GHG emissions from combustion and downstream use of the oil would amount to 0.7 million to 5 million metric tons annually. But if one calculates the total GHG emissions that would result from combustion of all the oil and gas that the DEIS predicts will be extracted from the Arctic Refuge, this number is magnitudes higher. CAP estimates that closer to 62 million metric tons of CO2 equivalent would be released into the atmosphere from the oil that the DEIS predicts will be produced from the Arctic Refuge-equal to the annual emissions of approximately 16 coal-fired power plants or 13 million cars.	The comment seems to be questioning the Draft EIS analysis methodology, which considers only the incremental global amount of petroleum production that could result from the proposed leasing, rather than looking at the total production as if it were isolated from global markets. The Draft EIS appropriately provides a comparison of the GHG emissions of the proposed action versus the No Action Alternative (i.e., the incremental GHG emissions), as prescribed by NEPA. In addition, BOEM's MarketSim analysis shown in Appendix R, Table R-3, of the Final EIS, shows total consumption-related GHG emissions of the Coastal Plain development, prior to discounting to account for market supply and demand effects.
35.	Margaret	Lorenz	—	67570	1	Climate and Meteorology	The DEIS must take into account the carbon pollution that this fossil-fuel project would exacerbate.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Withheld	Withheld	Rising Tide Wenatchee	68447	1	Climate and Meteorology	The Draft EIS does next to nothing to address the cumulative atmospheric impacts of the proposed project. While it mentions in passing reports by BLM, IPCC and others, it says nothing at all about how the distribution and use of the fossil fuels developed by the proposed project will impact Earth's atmosphere and climate.	The Draft EIS presents estimated GHG emissions in a global context, so that the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The state-of-the-science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions. "In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible." (IPCC Third Assessment Report [2001], Section 14.2.2.2, page 774).
37.	Diane	Viera	—	69368	1	Climate and Meteorology	The DEIS significantly underestimates the amount of carbon pollution that oil leasing and development would add to atmosphere, and fails to truthfully address the implications of exacerbating the climate crisis.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Withheld	Withheld	—	69486	1	Climate and Meteorology	The DEIS significantly underestimates the amount of carbon pollution that oil leasing and development would add to atmosphere, and fails to truthfully address the implications of exacerbating the climate crisis.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
39.	Withheld	Withheld	—	69532	2	Climate and Meteorology	The DEIS significantly underestimates the amount of carbon pollution that oil leasing and development would add to atmosphere	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Withheld	Withheld	—	69634	3	Climate and Meteorology	The DEIS further under-represents the amount of carbon pollution created, thus failing to truthfully address leasing implications to the looming climate crisis	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
41.	Becky	Long	—	69710	7	Climate and Meteorology	Comment- P. 3-6, Chapter 3.2.1 Climate and Meteorology, Impacts associated with potential development on climate change. Direct and Indirect Greenhouse Gas (GHG) Emissions are underestimated. The draft underestimates emissions by only calculating only "the relatively small increase in US demand from increased US supply." The draft only states there is a potential for additional GHG emissions from combustion of products themselves in global market place. But this is the exact data number that should be calculated i.e. burning all of the oil and gas that is projected to be extracted. This is important because p. 3-5 states the macro-scale effects on climate change would be through the increased GHG emissions. Carbon equivalent emission as a data category needs to be explained.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Becky	Long	—	69710	9	Climate and Meteorology	The oil and gas industry states that methane emissions from production are unavoidable. In a r 12/18/2018 Alaska Oil and Gas Conservation Commission hearing on methane emissions, Kara Moriarty, the Executive Director of the Alaska Oil and Gas Association which is an industry trade lobbying group testified to the following. "The venting or flaring of some natural gas is practically an unavoidable consequence of oil and gas development. Routine and continuous flaring of pilot and purged gas during the non-emergency situations is a key component to the safe development of oil and gas reserves." Additionally, flaring of the gas associated with drilling and production produces black carbon which is a known and recognized localized warming impact on ice and snow thus creating more climate impacts.	Text has been added to the Final EIS to indicate that some of the natural gas produced would be flared for safety purposes. The GMT2 emissions analysis, on which Coastal Plain projects relied for the direct emissions estimates, includes flaring emissions. The BLM agrees that some GHG and black carbon emissions from petroleum production are unavoidable.
43.	Becky	Long	—	69710	11	Climate and Meteorology	Comment-P. 3-9 Chapter 3.2.1. Social Costs of GHG Emissions The Social Cost of Carbon (SCC) Protocol should be used to quantify impacts. The SCC protocol should be used to analyze possible climate change impacts. Tribal climate adaption planning efforts in the North Slope could be used as inputs into the protocol. The communities of Kaktovik, Nuiqsut, Atkasak, and Wainwright have completed Impact Assessments. Utqiagvik has had workshops and webinars.	The BLM has reviewed this comment and determined that the social cost of carbon (SCC) is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	Rebecca	Rom	—	69711	3	Climate and Meteorology	Nowhere are the impacts of climate change felt more acutely than the Arctic, which is warming at more than double the rate of the rest of the country. As villages erode, permafrost melt weakens infrastructure, and food sources disappear, the draft EIS fails to assess how expanding fossil fuel development could exacerbate the impacts of climate change already at the front door of Arctic communities.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
45.	Jennifer	Bradford	—	69764	2	Climate and Meteorology	The DEIS significantly underestimates the amount of carbon pollution that oil leasing and development would add to atmosphere, and fails to truthfully address the implications of exacerbating the climate crisis.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	MaryRose	Randall	—	69773	2	Climate and Meteorology	You have severely underestimated the amount of carbon pollution that would be added to the atmosphere, and its effect on climate change.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
47.	Withheld	Withheld	—	70934	17	Climate and Meteorology	There are numerous and significant differences in the climate, hydrology and wildlife of the Arctic Refuge and the Colville Delta (GMT-2). If development decisions are being based on the assumption that the climate is the same, then there will be significant errors in judgment. Climate data for the Arctic Refuge should be used, rather than relying on an erroneous proxy 150 - 200 miles to the west. Kaktovik is an acceptable data-point for the coastal region but without data for Kavik or any location inland, BLM is essentially shooting in the dark and should be required to gather additional data prior to leasing.	The BLM does not assume that the climate in the Arctic Refuge is analogous to the climate in the Colville Delta. The Draft EIS includes climate data for Kaktovik and areas inland from Kaktovik on pages 3-2 to 3-4; it does not rely on climate data from the Colville Delta. NEPA analyses for future site-specific development proposals would include the collection of location-specific meteorological data if needed for that analysis.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Dan	Harrigan	—	71211	1	Climate and Meteorology	the DEIS significantly underestimates the carbon pollution that it would add to the atmosphere, and fails to truthfully address the implications of exacerbating the climate crisis.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
49.	John	Lawrence	Form Letter 4 - Email	71636	4	Climate and Meteorology	The EIS should study how oil and gas drilling will impact our climate.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	3	Climate and Meteorology	The DEIS significantly underestimates carbon emissions that would result from drilling in the Arctic Refuge. The estimate of impacts in the is based on the expected increase in demand that would result from developing the Refuge, but it does not account for burning all of the oil projected to be extracted. The final EIS cannot evade the common-sense of an assessment of the impacts of the burning of the fossil fuels extracted. The Center for American Progress has analyzed the project proposal and estimates that roughly 62 million tons of CO2 would be released into the atmosphere: the impact of these emissions to the global climate, to the arctic, and to the Refuge must be accounted for in a final EIS.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. Appendix R, Table R-3, of the Final EIS, shows total consumption-related GHG emissions of the Coastal Plain development, prior to discounting to account for market supply and demand effects, based on BOEM's MarketSim analysis. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change. The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Withheld	Withheld	The North Face	72063	1	Climate and Meteorology	The Arctic is ground zero for climate change - temperatures there are rising at twice the rate of the rest of the planet.[1 National Oceanic and Atmospheric Administration: Arctic Report Card] According to The Intergovernmental Panel on Climate Change (IPCC), there is no room in the carbon budget for new fossil fuel extraction anywhere in the United States[2 IPCC Fifth Assessment Report], as we are the world's largest historic emitter of greenhouse gas pollution, responsible for 26 percent of cumulative global CO2 emissions since 1870, and are currently the world's second highest emitter on an annual and per capita basis[3 Global Carbon Project - Global Carbon Budget]. The draft EIS inadequately evaluates how expanding fossil fuel development could further the on the ground impacts of climate change.	The scientific evidence suggests that most of the observed warming in Alaska over the past few decades is due to a natural ocean circulation feature known as the Pacific Decadal Oscillation (PDO; see page 3-3 of the Draft EIS). Restricting GHG emissions, especially in just the U.S., which now represents a small and shrinking portion of global emissions, would not have a measurable effect on climate change globally or regionally in Alaska.
52.	Withheld	Withheld	—	72087	1	Climate and Meteorology	The DEIS significantly underestimates the greenhouse gas emissions that would result from drilling the Arctic Refuge. Extrapolating from ratios in Table 3-4 (volume 1, p.78) the total annual indirect GHG emissions from the oil produced in the Arctic Refuge, under their 'high-end case' scenario, would be approximately 128 million metric tons of CO2 equivalent, or the annual emissions of approximately 32 coal fired power plants or 27 million cars, not 0.7- 5 million metric tons stated.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Withheld	Withheld	—	73209	1	Climate and Meteorology	The Trans Alaska Pipeline is over forty years old and was designed for a 30-year service life. It operates on borrowed time and is fragile and subject to catastrophic failure at any time. It was also designed not to melt the existing permafrost along its corridor, but not to survive severe stresses of melting permafrost due to global warming. The Climate Change section of the EIS does not address this vital aspect that underlies the economic viability of all oil and gas programs on the North Slope and there is no known plan to replace TAPS. This is a severe deficiency in the EIS because without TAPS, no oil will leave the Coastal Plain of the Arctic Refuge. This program will be defunct.	TAPS is regulated by state and federal authorities in terms of its safety and viability for continued use. TAPS is maintained to provide for long-term continued use.
54.	Lisa	Baraff	Northern Alaska Environmental Center	74306	24	Climate and Meteorology	The BLM significantly underestimates carbon emissions that would result from drilling in the Arctic Refuge, estimating only 56,739 to 378,261 metric tons of annual direct GHG emissions (from extraction, transport, etc.) and 0.7 to 5 million metric tons of annual indirect GHG emissions (from combustion and downstream use of the oil) - measured in CO2 equivalent. (Vol. 1, Table 3-5 p.78) This is misleading and only calculated from the increase from oil demand that the analysis predicts will result from developing the Coastal Plain and does not account for burning all of the oil BLM projects will be extracted. That number is much larger.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
55.	Lisa	Baraff	Northern Alaska Environmental Center	74306	25	Climate and Meteorology	The DEIS fails to assess individual and cumulative impacts of the GHG emissions that will result from the oil and gas program. There is no assessment of the climate change impact associated with the anticipated emissions.	The Draft EIS specifically estimates the GHG emissions impacts of the proposed action in a global context, which is by definition cumulative in accounting for all other global GHG sources.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Allen E.	Smith	—	74324	1	Climate and Meteorology	The DEIS does not consider that development there would hasten climate change on the coastal plain, is inadequate in its analysis of these negative outcomes, and does not meet the requirements of NEPA.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
57.	Allen E.	Smith	—	74324	13	Climate and Meteorology	the DEIS fails to address climate change impacts from oil and gas leasing activities on the ANILCA protected resources of the Arctic Refuge coastal plain and fails to evaluate climate change impacts on the safety and long-term productivity of oil and gas leasing activities there.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Rosa	Brown	Vuntut Gwitchin Government	74326	24	Climate and Meteorology	Climate change and stressors: Lack of Climate Change impact analysis In its assessment of the impacts of climate change on the Porcupine caribou herd, the draft EIS primarily speaks in speculative future generalities, for example "could result in...." The draft EIS fails to synthesize the results of research and Traditional Knowledge on past and present climate change effects on the Porcupine caribou herd, their habitats and migration behaviour. The draft EIS does not include assessment of the combined and synergistic impacts of climate change and Coastal Plain oil and gas activities, infrastructure, and production in the future on the Porcupine caribou herd. Nor does it consider the trajectory of climate change under the range of different IPCC scenarios and their impact on environmental change in the region and caribou, and consider the added risk due to the changing climate from oil and gas development over the 85 - 130 year life oil and gas activities and infrastructure in the Coastal Plain.	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, and government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis. In addition, more information on the synergistic effects of development and climate change on wildlife and other resources has been added to the cumulative effects sections in the Final EIS.
59.	Philip	Wight	—	74333	3	Climate and Meteorology	Furthermore, the methods employed by the DEIS in calculating cumulative carbon emissions-- both in terms of upstream development and emissions from consumption--relies upon flawed methods and analysis. The analysis must consider how the extra potentially billions of barrels of oil will induce demand and cause emissions beyond the baseline status quo. The DEIS must include a comprehensive analysis of extra greenhouse gas emissions that will result from both upstream development and downstream demand.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions, based on BOEM's MarketSim analysis provided in Appendix R of the Final EIS. Because the increase is extremely small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Renae	Smith	Counsel for Environmental Protection	74336	25	Climate and Meteorology	Second, despite recognizing the inherent difficulties and uncertainties in economic projections, the DEIS's greenhouse gas emissions analysis assumes without reasonable explanation that oil production will increase over the next 70 years without acknowledging significant efforts to move toward cleaner energy sources. 137 As discussed above, movement toward cleaner energy has the potential to contribute toward lower oil prices, which would make Coastal Plain development uneconomic. 138 Clean energy policy and greenhouse gas reduction goals and state legislative mandates together with technological developments are depressing both the U.S. and global demand for oil, resulting in a projected 2 billion barrel per day decline from current levels over the next 5 to 15 years.139	The BLM used the best available information for oil production at the time of the EIS preparation. At this time, world oil production is on an upward trajectory, despite contributions by cleaner energy sources to total energy production. Assuming the demand for oil and the production rate will continue to climb provides a realistic estimate of GHG emissions.
61.	Renae	Smith	Counsel for Environmental Protection	74336	28	Climate and Meteorology	artificially minimizes the potential impacts of greenhouse gas emissions and related climate impacts from the proposed Leasing Program.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Renae	Smith	Counsel for Environmental Protection	74336	28	Climate and Meteorology	Third, BLM downplays the proposed Leasing Program's climate impacts by misleadingly oscillating between U.S. and global comparisons. Although the DEIS acknowledges that petroleum is a "global commodity," the DEIS unreasonably narrows its greenhouse gas emission analysis to United States supply and demand for petroleum. 162 Then the DEIS looks to global petroleum liquids production to determine the percentage of global oil production that may result if the proposed Leasing Program reaches peak production.163 Based on this comparison to the global market, the DEIS concludes that at peak production, "post-lease oil and gas activities could supply in the range of 0.1 to 0.5 percent of global oil production" and that this percentage is likely to decrease over time "[g]iven that global oil production continues to increase."164 BLM cannot have it both ways. BLM cannot look to global production to minimize the proposed Leasing Program's contribution to overall production and then focus only on United States demand for purposes of estimating total greenhouse gas emissions with and without Coastal Plain development.165 By shifting the bases of comparison, BLM's analysis unreasonably and	The U.S. supply and demand are a subset of global supply and demand, given oil is now imported and exported from the U.S.; therefore, U.S. projections necessarily account for the global oil market. By basing it on U.S. supply and demand, the Draft EIS analysis is not compromised by the analysis of incremental oil production for the proposed action.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Renae	Smith	Counsel for Environmental Protection	74336	29	Climate and Meteorology	BLM ignores a recent study finding that methane emissions were 60 percent higher than the EPA inventory estimate, likely because existing inventory methods miss emissions released during abnormal operating conditions. 168 BLM's incomplete and cursory summary fails to satisfy NEPA's requirement that BLM take a hard look at and robustly analyze greenhouse gas emission impacts from methane emissions associated with any natural gas and oil development under the proposed Leasing Program.	The BLM's projections of oil production and GHG emissions are necessarily order-of-magnitude accuracy. Methane emissions globally are a small part of total CO2e; furthermore, most of that methane is due to livestock and other (non-petroleum) methane sources. The methane leaks associated with Coastal Plain production are expected to be a small portion of CO2e emissions.
64.	Renae	Smith	Counsel for Environmental Protection	74336	32	Climate and Meteorology	[comment:74336-32; 237.01]BLM's other reasons for rejecting the social cost of carbon protocol lack a reasonable basis. First, BLM implies that because the NEPA review process is not a rulemaking process for which the social cost of carbon tool was originally created and because federal policy has changed,...[comment end]	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.
65.	Renae	Smith	Counsel for Environmental Protection	74336	32	Climate and Meteorology	BLM has no obligation to calculate the social cost of carbon. 177 That reasoning is inconsistent with legal precedent requiring agencies to quantify both the costs and benefits of a proposed action. 178 BLM cannot rely on a general change in policy to refuse to comply with legal precedent interpreting NEPA's requirements.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Renae	Smith	Counsel for Environmental Protection	74336	33	Climate and Meteorology	BLM's criticism that the social cost of carbon protocol does not allow for the "incremental impact" of a project on the environment or is not useful because it generates a range of dollar cost figures lacks support and contradicts BLM's previous statement that it sometimes "describes impacts using ranges of potential impacts." ¹⁷⁹ If BLM uses ranges to describe impacts elsewhere in its analysis, then BLM should also be willing to use a range of dollar cost figures generated by the social cost of carbon. Moreover, NEPA does not allow federal agencies to simply refuse to quantify carbon costs based on such claims of uncertainty or incomplete information. ¹⁸⁰	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Renae	Smith	Counsel for Environmental Protection	74336	34	Climate and Meteorology	BLM's cumulative impacts analysis fails to consider the reasonably foreseeable cumulative impacts of the proposed Leasing Program's greenhouse gas emissions when combined with other regional oil and gas development. Although Appendix F identifies ten other "reasonably foreseeable future onshore oil and gas projects" and claims that these projects were included in its cumulative effects analysis, BLM's cumulative impacts analysis of greenhouse gas emissions does not include consideration of these other projects. 185 For example, although Appendix F identifies the Willow Oil and Gas Project within the National Petroleum Reserve in Alaska (NPR-A) as a reasonably foreseeable project subject to its cumulative impacts analysis, BLM's discussion of cumulative impacts from greenhouse gas emissions does not discuss the Willow Project.186 BLM does, however, discuss the Willow Project in its analysis of cumulative economic impacts, along with the Point Thomson project on the eastern North Slope, the Greater Mooses Tooth One and Two Projects.187 Similarly, although BLM identifies the Alaska LNG Project, which would include a gas treatment plant at Prudhoe Bay and an 800-mile pipeline, BLM does not assess the cumulative climate impacts of that project and gas development in the proposed Leasing Area.188 It is arbitrary for BLM to identify these other projects as part of its cumulative impacts analysis and then fail to conduct that analysis with respect to greenhouse gas emissions and resulting climate change impacts.189	Other production projects, whether in Alaska or across the globe, are implicitly included in the supply and demand analysis. Given the global nature of the GHG concern, it does not matter where the emissions occur; therefore, other reasonably foreseeable projects that happen to be on the North Slope are not relevant to the GHG analysis.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Renae	Smith	Counsel for Environmental Protection	74336	36	Climate and Meteorology	BLM cannot rely on incorporation of its analysis of cumulative impacts in the Greater Mooses Tooth Two Final Supplemental EIS to remedy these deficiencies because that analysis too is flawed. The Greater Mooses Tooth Two EIS contains an inadequate assessment of the cumulative impacts of greenhouse gas emissions and climate change, ¹⁹² does not consider the social cost of carbon, ¹⁹³ and does not account for the impacts of the proposed Leasing Program, ¹⁹⁴ which BLM projects to be significantly larger than the Greater Mooses Tooth Two project. ¹⁹⁵ Accordingly, BLM cannot rely on the Greater Mooses Tooth Two to satisfy its obligation to consider the cumulative impacts of greenhouse gas emissions on climate change. ¹⁹⁶	Other production projects, whether in Alaska or across the globe, are implicitly included in the supply and demand analysis. Given the global nature of the GHG concern, it does not matter where the emissions occur; therefore, other reasonably foreseeable projects that happen to be on the North Slope are not relevant to the GHG analysis. Because the GHG analysis considers the incremental petroleum production on a national (and by extension global) basis, it is a cumulative analysis.
69.	Withheld	Withheld	—	75139	1	Climate and Meteorology	First, it minimizes the true severity of decades of climate change-related impacts on natural and human ecosystems and the public health that will be experienced through further oil and gas development such as that proposed in the presented alternatives. In particular, the rationale for not providing a social cost of carbon calculation is not justified. Furthermore, the severity of both local and global landscape changes such as surface erosion, loss of sea ice, impacts on precipitation patterns, and loss of habitat are dramatically understated when considering these alternatives in the context of global climate change related to all sources of GHG emissions.	Potential climate change impacts on natural resources (including landscapes), human resources, and public health are addressed in appropriate sections of the Final EIS. BLM's reason's for not including SCC calculations are documented in Appendix F.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	1	Climate and Meteorology	BLM has acknowledged that this leasing proposal will generate direct GHG emissions from construction, drilling, production, processing, and transport of petroleum products as well as indirect emissions from the combustion of those products in the global marketplace. We appreciate that BLM has quantified these emissions but there are four key deficiencies in the GHG inventory which should be remedied in the final EIS. First, for indirect emissions from oil and gas combustion, BLM has failed to quantify gross emissions from the combustion of the oil and gas products that will be extracted pursuant to the proposed leasing program. Instead, BLM states that it has used a model ("MarketSim") to estimate how the increase in production will affect US demand for petroleum products and then used a second model ("GHG Model") to estimate the corresponding emissions of those market impacts. There are several problems with BLM's approach: * As BLM acknowledges, "the MarketSim model considers only the US supply and demand for petroleum; thus, the accuracy of the change (increase) in petroleum demand estimated from MarketSim projections is limited, given its scope is just the US market; however, any type of supply and demand projections must be considered as quite uncertain, given the inherent difficulties in economic projections." ¹ * The EIS contains very little information about the inputs, assumptions, and functions for both models, making it impossible for a reader to understand how BLM actually calculated emissions. * The EIS does not contain the full results from this modelling exercise. For example, with respect to the MarketSim outputs, BLM simply states	MarketSim simulates end-use domestic consumption of oil, natural gas, coal, and electricity in four sectors (residential, commercial, industrial, and transportation); primary energy production; and the transformation of primary energy into electricity. MarketSim mostly represents U.S. energy markets, but it also captures interaction with world energy markets as appropriate. BOEM recognizes the uncertainty in its projections and the further uncertainty in attempting to model the entire set of energy market substitutions that would occur globally. BOEM also does not have sufficient data to support estimates of the GHG emissions likely to result from changes in foreign oil consumption. In regards to inputs, assumptions, and functions for the MarketSim and GHG models, this information is contained in BOEM's documentation for these models: https://www.boem.gov/ESPIS/5/5612.pdf https://www.boem.gov/OCS-Report-BOEM-2016-065/ . For the MarketSim model, the Final EIS has been revised to say that MarketSim estimated the percentage of proposed action-related GHG emissions that would be incremental in the U.S. energy (not just oil) market. Thus, the 3.9 percent in the high-end case and the 3.4 percent in the low-end case are not the increase in oil demand; they are the increase in domestic energy demand, as a percentage of the total energy in petroleum that would be produced in the Coastal Leasing area. In regards to how the BLM accounted for factors such as the effects of climate policies on oil demand, BOEM's MarketSim model uses the EIA Annual Energy

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	that the model projects an increase in oil demand equivalent to 3.4% (low-end case) to 3.9% (high-end case) of the projected Coastal Plain leasing production. * The model results are presented as a uniform annual projection for the anticipated 70- year duration of oil and gas production, despite the fact that baseline US oil demand will almost certainly decrease dramatically over this period due to the compelling need to reduce GHG emissions and fossil fuel consumption. It is unclear whether and how BLM accounted for factors such as the effect of climate policies on oil demand when applying the model due to the problems noted above. We recommend that BLM address these deficiencies by: (i) quantifying gross combustion emissions, (ii) more fully disclosing the assumptions, inputs, functions, and outputs of the models used in its net emissions analysis, and (iii) adjusting its model parameters to provide more accurate emissions estimates (e.g., by expanding geographic coverage and energy sources, 1 DEIS at 3-7. 3 3 and by accounting for long-term effects of climate policies on petroleum demand in baseline projections).	Outlook baseline data in the model. EIA's forecast looks at existing policies and does not forecast future laws or policies. BOEM uses the EIA projections as the official government estimates of future energy consumption. Any potential climate policy would be too uncertain at this stage to fully estimate into the model. There are currently no reliable methodologies for forecasting foreign energy cross-price elasticities and oil/gas price shock substitution responses to arrive at a global GHG emissions impact from associated domestic changes. Also, the D.C. Circuit has held that agencies are not required to model how their actions will affect global energy markets and how those market changes will, in turn, affect foreign greenhouse gas emissions (Sierra Club, 867 F.3d at 202). That kind of analysis is simply "too speculative" and infeasible to be required under NEPA. In sum, the EIS has been updated to include the gross combustion emissions, to add full results tables, to reference the Lifecycle paper and MarketSim documentation, and to provide information as to why alternative future carbon policies and foreign consumption aren't modeled.
71.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	2	Climate and Meteorology	it is unclear whether BLM considered all transportation emissions. BLM states that the direct emissions estimate includes transport emissions, but it does not specify whether the estimate is confined to transport within the project area or whether it also includes transport from the project area to end users. BLM should disclose the parameters of its analysis and should incorporate estimates of indirect transport emissions (from project location to end use) if they are not already included in the inventory.	The GHG emissions of the proposed action are only approximations, given detailed design information of the pipeline infrastructure and more are not available at this stage. Subsequent NEPA actions for specific developments within the Coastal Plain would provide more detail; however, as with the GMT2 analysis of indirect GHG emissions, the lifecycle analysis tool used for the Coastal Plain includes the indirect emissions from transport of the oil.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	3	Climate and Meteorology	BLM acknowledges that methane emissions will be generated as a result of methane leaks during transport and estimates that these emissions will be equal to roughly 5% of indirect emissions from combustion. However, BLM does not include these emissions in its emissions inventory (i.e., the tables summarizing indirect and direct emissions). BLM should include these emissions in its inventory.	The BOEM's modeling tool used for "indirect" lifecycle GHG emissions includes CO2 emissions, nitrous oxide emissions, and methane emissions; therefore, the data presented in the Draft EIS already include methane emissions from transport, refining, and consumption of petroleum products.
73.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	4	Climate and Meteorology	BLM has failed to quantify total emissions across the lifetime of the project. While BLM does provide annual estimates of direct and indirect emissions, the total lifetime emissions are not readily apparent. BLM should disclose these to give decision-makers and public a more comprehensive sense of potential emissions impacts.	The GHG emissions were presented on an annual basis to allow a comparison with global, U.S., and Alaska emissions, which are reported annually. Total GHG emissions for the life of the development can be derived by multiplying annual emissions by the assumed 70-year production period. See Appendix R for MarketSim analysis.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	5	Climate and Meteorology	"should present the environmental impacts of the proposal and alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and public."4 BLM should therefore revise its GHG analysis to provide a comparison of both direct and indirect emissions across all alternatives.	All production alternatives are expected to result in total production within the range of 1.5 to 10 billion barrels of oil over the lifetime of the development. The Draft EIS analysis provided GHG estimates commensurate with these bounds. Given that GHG emissions will be essentially proportional to production, the reader can estimate GHG emissions of any hypothetical production amount between these bounds. Estimates of recoverable oil by alternative are not available, but EIS Section 3.2.6, Petroleum Resources provides a qualitative discussion of the potential for reduced production among Alternatives B, C, D1, and D2. Surface access to significant portions of the Coastal Plain area would be precluded under the more restrictive options, Alternatives D1 and D2; however, much of the potentially non-leased portion of the program area under these alternatives (34 percent of the total area) has lower production potential. Also, horizontal drilling from adjacent areas can reach some acreage restricted from surface development; therefore, production potential, and related greenhouse gas emissions, would be only marginally reduced under the Alternatives D1 and D2, and are expected to be essentially unchanged between Alternatives B and C. See Appendix R for MarketSim analysis.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	5	Climate and Meteorology	The EIS contains only one emissions inventory for the proposed action. There is no comparison of projected emissions across the four project alternatives. As noted in the NEPA regulations, the analysis of alternatives is “the heart of the environmental impact statement” and agencies	All production alternatives are expected to result in total production within the range of 1.5 to 10 billion barrels of oil over the lifetime of the development. The Draft EIS analysis provided GHG estimates commensurate with these bounds. Given that GHG emissions will be essentially proportional to production, the reader can estimate GHG emissions of any hypothetical production amount between these bounds. Estimates of recoverable oil by alternative are not available, but EIS Section 3.2.6, Petroleum Resources provides a qualitative discussion of the potential for reduced production among Alternatives B, C, D1, and D2. Surface access to significant portions of the Coastal Plain area would be precluded under the more restrictive options, Alternatives D1 and D2; however, much of the potentially non-leased portion of the program area under these alternatives (34 percent of the total area) has lower production potential. Also, horizontal drilling from adjacent areas can reach some acreage restricted from surface development; therefore, production potential, and related greenhouse gas emissions, would be only marginally reduced under Alternatives D1 and D2, and are expected to be essentially unchanged between Alternatives B and C.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
76.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	6	Climate and Meteorology	approved by the courts, which can be used to assign a dollar value to the potential impacts of these emissions. ⁷ * The Environmental Protection Agency (EPA)'s quantification threshold of 25,000 tons per year of CO ₂ e to identify major emitters for the purposes of GHG reporting (as noted by EPA, facilities that surpass this threshold are considered the "largest emitters" in the country). ⁸ * The EPA's GHG Equivalencies Calculator, which would allow BLM to compare emissions from the proposal with, e.g., emissions from household electricity use or vehicle miles driven. ⁹	The comparisons with state, national, and global GHG emissions provided in the Draft EIS were considered the most objective comparisons with potential Coastal Plain emissions. Equivalency calculators provide a changing metric, as the average motor vehicle mileage changes rapidly and household electricity use trends toward lower GHG production.
77.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	6	Climate and Meteorology	The analysis of GHG emissions contains no discussion or conclusion on the significance of those emissions. The only analytical technique BLM uses to assess the magnitude of the emissions is a comparison to global and national total emissions - a technique which produces misleading results, insofar as the project emissions are expressed as a relatively small percentage of these much larger totals (e.g., BLM estimates that the Coastal Plain direct emissions are approximately 0.0001 to 0.0008 % of global emissions). CEQ explicitly rejected this approach in its 2016 Final Guidance on the Consideration of Climate Change in NEPA Reviews, explaining that: [A] statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives	There is no basis to assess the significance of GHG emissions, as there are no impact thresholds of acceptability. The context and intensity of impacts guidance is not helpful for GHG emissions. This is because it is not possible to attribute individual proposed action impacts on climate. SCC is not used for reasons explained in Section F.2 of Appendix F of the Draft EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact. ⁵ We recognize that this guidance has been rescinded, but the CEQ's reasoning holds true: comparisons to global and national totals are at best unhelpful and at worst misleading to decisionmakers and the public. To assess the significance of these emissions, BLM should refer to NEPA regulations defining the criteria to be used in significance determinations (which instruct agencies to consider both the context and intensity of the impacts). ⁶ Contextual factors which are relevant to any proposal which would increase the production of fossil fuels include: (i) the fact that climate change is such a massive environmental problem; (ii) the broad scope of interests that will be adversely affected by this problem, and (iii) the compelling need to rapidly reduce dependency on fossil fuels to address this problem. With regards to intensity, BLM should use the following tools to assess and disclose the magnitude of the emissions impact: * The Social Cost of Carbon (SC-CO2), Methane (SC-CH4), and Nitrous Oxide (SC-N2O) metrics that were developed through a federal interagency consultation process and	(see above)

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78.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	7	Climate and Meteorology	BLM acknowledges that many commenters have urged it to use the social cost metrics in its NEPA analyses, but maintains that this is in appropriate because: (i) the metrics were developed for a rulemaking context, (ii) NEPA does not require a cost-benefit analysis or monetization of costs; (iii) the metrics don't accurately reflect the incremental emissions impact of the proposal; and (iv) the metrics are not useful to decision-makers. With regards to the first point: the metrics may have been developed for a rulemaking context, but they can readily be used in an environmental analysis to better understand the potential costs associated with greenhouse gas emissions - and those cost estimates are a useful proxy for the actual impacts of climate change. The fact that the metrics were developed for rulemaking are irrelevant to the question of whether they would be useful in NEPA analyses. With regards to the second point: while it is true that NEPA does not require cost-benefit analysis or monetization of all adverse environmental impacts, an agency cannot arbitrarily monetize some costs and benefits while ignoring others in its EIS. Recognizing this, courts have held NEPA analyses to be inadequate where economic costs and benefits are monetized and the effect of GHG emissions is not monetized.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F.2.1 in Appendix F of the EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	9	Climate and Meteorology	BLM asserts that the "SCC protocol does not measure the actual incremental impacts of a project on the environment and does not include all damages or benefits from carbon emissions." This statement is partially incorrect. The SC-CO2, SC-CH4, and SC-N2O measure the actual incremental impacts of a project on the physical and human environment by specifying the incremental costs associated with an incremental increase in greenhouse gas emissions. These impacts are expressed as monetary costs rather than specific physical impacts because this is a reasonable and comprehensible way to aggregate many different impacts in a single metric. While it is true that the metrics do not capture all costs associated with GHG emissions, they at least capture a portion of those costs (and BLM can always disclose the costs that are not covered).	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.
80.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	10	Climate and Meteorology	13 While we agree that there is no significance threshold defined for GHGs, this is true for many different types of impacts that are evaluated in NEPA reviews - there are no bright line rules for assessing significance, and agencies typically must use their discretion to determine when impacts pass the threshold of significance. The monetization of climate change impacts, however, is useful in informing significance determinations insofar as it provides a standard metric for comparing different impacts.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	10	Climate and Meteorology	BLM states that "the dollar cost figure is generated in a range and provides little benefit in assisting the BLM Authorized Officer's decision for program or project-level analyses, especially given that there are no current criteria or thresholds that determine a level of significance for social cost of carbon monetary values."	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.
82.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	11	Climate and Meteorology	The emissions far surpass the reporting and quantification threshold of 25,000 tons per year of CO ₂ e which has previously been used by CEQ and EPA to identify major emitters. Indeed, the annual emissions in the first year are 30x higher under the low case and 215x higher under the high case. * According to EPA's GHG Equivalencies Calculator, the annual emissions from this proposal are equivalent to the emissions from: (i) approximately 160,000 - 1,142,000 passenger vehicles driven each year, or (ii) approximately 132,000 - 938,000 homes' electricity use for one year. Again, these are very large numbers which would be viewed as significant in other contexts.	The BLM does not dispute that the Coastal Plain development projected GHG emissions are significant in the context of existing regulations, such as the cited EPA mandatory rule reporting threshold of 25,000 tons/year.
83.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	11	Climate and Meteorology	We recognize that it may be difficult to precisely define a significance threshold for GHG emissions - but such a precise definition is unnecessary for this project because the total lifetime emissions and corresponding costs clearly surpass any reasonable threshold of significance. The following facts support this finding: * The total lifetime costs of emissions generated as a result of this proposal would range from approximately \$3.3 billion (low case) to \$23.4 billion (high case). These are significant costs by any measure. The annual costs (\$32 to \$159 million) are also significant by any measure.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	13	Climate and Meteorology	BLM's analysis of the cumulative impacts of GHG emissions simply refers readers back to its analysis of direct and indirect emissions and the comparisons to global and national GHG totals. BLM does not consider the cumulative GHG effects across multiple leasing decisions at any geographic scope. BLM should update this analysis to account for the cumulative effects of oil and gas leasing decisions in Alaska and the entire United States, as well as the cumulative effects of all federal fossil fuel development. We are not suggesting that BLM should conduct an entirely new nationwide analysis of GHG impacts from fossil fuel leasing for each leasing plan and decision - rather, the federal government should prepare such an analysis, update it regularly, and incorporate it into NEPA reviews for fossil fuel leasing decisions.	Other production projects, whether in Alaska or across the globe, are implicitly included in the supply and demand analysis. Given the global nature of the GHG concern, it does not matter where the emissions occur; therefore, other reasonably foreseeable projects that happen to be on the North Slope are not relevant to the GHG analysis.
85.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	14	Climate and Meteorology	In the EIS, BLM references general climate change effects pertinent to the specific categories of affected environment and environmental consequences. However, these references provide insufficient information to evaluate the significance of these impacts on the project or how the project will cumulatively affect the environment and vulnerable species in combination with these climate impacts. BLM should ensure its assessment reflects the latest climate science and risks, further analyze how the cumulative impacts of climate change and energy development could negatively affect species and ecosystems, and more substantively address how climate change will impact oil and gas infrastructure and how those effects can be mitigated to reduce the risk of fuel leaks and fires.	Infrastructure for oil and gas development is not expected to be subject to any greater rate of change than it already has been over the past 40 plus years on the North Slope. There has been no measurable increase in the rate of spills on the North Slope over this period. For other natural and human resources, the Final EIS cumulative effects sections have been updated to include more information on the synergistic effects of Coastal Plain development and climate change where applicable.

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86.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	15	Climate and Meteorology	BLM notes a number of climate change impacts in passing, but should expand evaluation of the increased risks of wildfire, thawing permafrost, flooding, coastal erosion, loss of wetlands, and sea level rise as discussed in the most recent reports of the U.S. Global Change Research Program: * U.S. Global Change Research Program, Arctic Changes and their Effects on Alaska and the Rest of the United States. In Climate Science Special Report: Fourth National Climate Assessment, Volume I, at 303-332, available at https://science2017.globalchange.gov/ . 30 * U.S. Global Change Research Program, Chapter 26: Alaska, in the Fourth National Climate Assessment, Volume II, at 1185-1241, available at https://nca2018.globalchange.gov/ .	The Draft EIS incorporated by reference the climate change impacts noted by the commenter, including reports by the IPCC and NOAA. More information on the effects of development and climate change on natural and human resources has been added to the cumulative effects sections in the Final EIS.
87.	Jeannie	Ambrose	—	75238	6	Climate and Meteorology	Underestimation of carbon emissions released during O&G operations. Calculate how expansion of oil and gas development in the Coastal Plain will contribute to worsening of climate changes. The Arctic is warming faster than predicted and at twice the rate of the country.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. Regarding Arctic warming in recent decades, it is within the bounds of natural warming that has occurred apart from human activities since the last major ice age.

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88.	DJ	Schubert	Animal Welfare Institute	75588	9	Climate and Meteorology	BLM failed to take a hard look at the climate change impacts from oil and gas leasing and development in the Coastal Plain. The DEIS partially discloses the amount of carbon dioxide pollution that may result from oil and gas leasing and development.⁶ However, BLM must take a hard look at the climate change impacts from emissions that would result from allowing extraction of oil and gas resources in the Coastal Plain. Production, transportation, refinement, and eventual combustion of this oil and gas would emit large quantities of greenhouse gases. BLM must therefore consider the climate impacts of this additional oil and gas production in its NEPA analysis. Courts have held that where agency actions make additional resources available to consumers, the effects of consumption of that resource must be considered. <i>Mid States Coalition for Progress v. Surface Transportation Board</i>, 345 F.3d 520 (8th Cir. 2003). Yet BLM has avoided performing an analysis of the greenhouse gas emissions that would result from oil and gas development that is reasonably foreseeable. See <i>New Mexico ex rel. Richardson v. Bureau of Land Mgmt.</i>, 565 F.3d 683, 718 (10th Cir. 2009) (assessment of all “reasonably foreseeable” impacts must occur at the earliest practicable point).	Section 3.2.1 of the Draft EIS discloses potential direct and indirect GHG emissions associated with oil and gas-related activities on the Coastal Plain. The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project. The state of the science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions on specific areas. The BLM took a hard look by presenting estimates of the incremental global GHG emissions that could result from development and subsequent combustion of oil produced in the proposed leasing area.

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89.	DJ	Schubert	Animal Welfare Institute	75588	11	Climate and Meteorology	It is well settled that where an agency action causes greenhouse gas pollution, NEPA mandates that agencies analyze and disclose the impacts of that pollution. As the Ninth Circuit has held: "the fact that climate change is largely a global phenomenon that includes actions that are outside of [the agency's] control . . . does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming." Ctr. for Biological Diversity, 538 F.3d at 1217 (quotations and citations omitted); see also Border Power Plant Working Grp. v. U.S. Dep't of Energy, 260 F. Supages 2d 997, 1028-29 (S.D. Cal. 2003) (finding agency failure to disclose project's indirect carbon dioxide emissions violates NEPA). The need to evaluate such impacts is bolstered by the fact that "[t]he harms associated with climate change are serious and well recognized," and environmental changes caused by climate change "have already inflicted significant harms" to many resources around the globe. Massachusetts v. EPA, 549 U.S. 497, 521 (2007); see also id. at 525 (recognizing "the enormity of the potential consequences associated with manmade climate change.")). "Conclusory remarks" "do not equip a decisionmaker to make an informed decision about alternative courses of action." Natural Resources Defense Council v. Hodel, 865 F.2d 288, 298 (D.C. Cir. 1988). Similarly, "[p]erfunctory references do not constitute analysis useful to a decisionmaker in deciding whether, or how, to alter the program to lessen cumulative environmental impacts."	The BLM agrees that the proposed action could contribute cumulatively to climate change through the production and subsequent downstream combustion of oil and gas extracted from the Coastal Plain. Because it is not possible to attribute the global climate consequences to a single project, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provides context for decision makers and the public. The ongoing effects of climate change on specific natural and human resources in the Arctic were described in the Climate Change subsection of the Affected Environment for those resources in the Draft EIS. The Final EIS cumulative effects sections have been updated, where applicable, to include more information on the synergistic effects of Coastal Plain development and climate change on these resources.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
90.	DJ	Schubert	Animal Welfare Institute	75588	13	Climate and Meteorology	Additionally, the DEIS fails to take a hard look at the impact of methane pollution specifically from oil and gas development in the Coastal Plain. Oil and natural gas systems are the biggest contributor to methane emissions in the United States, accounting for over one quarter of all methane emissions, or 129.9 million metric tons of carbon dioxide equivalent each year. ⁷ This does not include methane that has been flared, captured, or otherwise controlled. ⁸ However, methane emission rates can differ quite dramatically from one oil and gas field to the next, and, depending on the type of mitigation and emission controls employed, emissions can range anywhere from 1 percent to 12 percent of production. ⁹ In order to sufficiently understand the scope of methane emission impacts, BLM should quantify estimated emission rates and analyze alternatives that would mitigate these impacts.	The BLM recognizes that some methane emissions are unavoidable with oil and gas development; however, it is not possible to make detailed estimates specific to potential development, given that specific types of processing equipment, and even the amounts of natural gas present in the oil reservoir, are not known. Therefore, attempting to further quantify methane emissions, beyond the methane contribution already included in BOEM's lifecycle GHG model, would be highly speculative at this point.
91.	DJ	Schubert	Animal Welfare Institute	75588	33	Climate and Meteorology	BLM's conclusory treatment of the cumulative impacts of greenhouse gas emissions fails to meet the hard look requirement under NEPA. See <i>Morris v. U.S. Nuclear Reg. Comm'n</i> , 598 F.3d 677, 681 (10th Cir. 2010).	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
92.	Deanna	Noel	Defenders Of Wildlife	75598	4	Climate and Meteorology	it does not account for the 16 impacts of carbon emissions. It does count it, but 17 it does not extrapolate what these impacts are.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
93.	Withheld	Withheld	—	75601	5	Climate and Meteorology	The assumptions used to calculate the carbon emissions resulting from drilling are misleading, and significantly underestimate total emissions. The calculations are based on only the net increase in oil demand that would result from developing the Refuge. To more realistically and accurately account for the carbon emissions of the oil and gas leasing, the calculations should account for the combustion of all oil and gas that would be extracted as a result of oil and gas leasing in the Refuge.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. In addition, the BOEM's MarketSim analysis shown in Appendix R, Table R-3, of the Final EIS, shows total consumption-related GHG emissions of the Coastal Plain development, prior to discounting to account for market supply and demand effects.
94.	Campbell	Webb	—	75610	1	Climate and Meteorology	* Please note: I also believe the DEIS is in error in its calculations in Table 3-4, by a factor of ten. According to the EPA (https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references) and other sources, 1 barrel of crude produces 0.43 tCO ₂ e. 10,000,000,000 barrels x 0.43 tCO ₂ e/barrel / 70 years = ~61 million tCO ₂ e/year, not 5 million. A serious and misleading error!	The commenter's calculation presumes the entire production is additive on a global basis. This is not correct; the oil production of the field would not be additive in the global market, as explained in Section 3.2.1 of the Draft EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
95.	Withheld	Withheld	World Wildlife Fund	75613	2	Climate and Meteorology	BLM also omits a meaningful analysis of the cumulative impacts of industrial disturbance and degradation of permafrost, increased thermokarsting, altered precipitation patterns and hydrology, shortened winter seasons and other manifestations of a changing climate.	Permafrost degradation was addressed in the Draft EIS (Soils section). The trend (none) in annual precipitation was addressed in the Climate and Meteorology section of the Draft EIS. Additional information regarding the increasing temperature trend on the North Slope has been added to the Climate and Meteorology section of the Final EIS. Hydrology and thermokarsting are addressed in Soils and Water Resources sections of the Final EIS as appropriate.
96.	Andrew	Ogden	—	75704	9	Climate and Meteorology	The BLM significantly underestimates carbon emissions that would result from drilling the Arctic Refuge, estimating only 56,739 to 378,261 metric tons of annual direct GHG emissions (from extraction, transport, etc) and 0.7 to 5 million metric tons of annual indirect GHG emissions (from combustion and downstream use of the oil) - measured in CO2 equivalent. (Volume 1, Table 3-5 p.78) This is a very misleading set of numbers and is calculated only from the increase from oil demand that the analysis predicts will result from developing the Refuge. It does not account for burning all of the oil they project will be extracted. That number is much larger. CAP estimates that the equivalent to the annual emissions of 16 coal fired power plants would be emitted - roughly 62 million tons.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. In addition, BOEM's MarketSim analysis shown in Appendix R, Table R-3, of the Final EIS, shows total consumption-related GHG emissions of the Coastal Plain development, prior to discounting to account for market supply and demand effects.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97.	Andrew	Ogden	—	75704	10	Climate and Meteorology	This DEIS completely fails to assess how expanding oil and gas development in the Refuge will further exacerbate climate adaptation and mitigation challenges in an Arctic that is warming at twice the rate of the rest of the country.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. Regarding Arctic warming in recent decades, it is within the bounds of natural warming that has occurred apart from human activities since the last major ice age.
98.	Stephen	Harvey	—	75722	1	Climate and Meteorology	In section 3.4.10, Table 3-37 shows the calculations of beneficial economic impacts up to the national level. In section 3.2.1 Climate and Meteorology the non beneficial social cost of GHG emissions is not calculated. This is a bias in the EIS analysis that favors development of oil and gas resources at the expense of society impacted by GHG emissions. The geographical scope of economy and environment should be the same. The EIS should use the existing methodology to calculate the social cost of GHG emissions to provide readers with a fair analysis of the economic impacts of oil and gas extraction.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.
99.	Lin	Davis	—	75891	5	Climate and Meteorology	The EIS does not address the current high rate of climate change in Alaska and the dangers it poses to oil and gas infrastructure.	Rates of climate change are described in BLM 2018a, incorporated by reference on page 3-2 of the Draft EIS, and is also stated in the Final EIS. The impacts of climate change on oil and gas infrastructure are described on page 3-9 of the Draft EIS, Impacts of Climate Change on Potential Development.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
100.	Lin	Davis	—	75891	6	Climate and Meteorology	Nor does it address the critical concern that oil and gas development in ANWR will exacerbate climate change by adding great amounts of black carbon from all the combustion activities inherent in just the development phase. The DEIS does not add in the burning of the oil extracted which is likely equivalent to the chugging of 16 new coal power plants.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
101.	Chandra	Turner	Inuvialuit Game Council	75904	34	Climate and Meteorology	We note that potential errors in the DEIS' calculating of GHG emissions as a result of the proposed project activities have been published. (https://www.americanprogress.org/issues/green/news/2019/01/10/464819/interior-department-cutting-corners-ignoring-science-arctic-national-wildlife-refuge/) Cumulative effects (especially as they pertain to ongoing climate change) are not adequately considered or analyzed throughout the DEIS. At best, the species-specific sections summarize the possible effects from the proposed project and other outside activities and make qualitative statements about cumulative impacts. No rigorous cumulative effects analysis that considers synergistic and accumulative effects has been undertaken (NRC 2003). Cumulative effects on Canadian environmental measures and plans are not considered.	The Draft EIS appropriately provides a comparison of the GHG emissions of the proposed action versus the No Action Alternative (i.e., the incremental GHG emissions), as prescribed by NEPA. The BLM has reviewed the NRC 2003 document and incorporated information from this report in the cumulative effects sections of the Final EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Chandra	Turner	Inuvialuit Game Council	75904	35	Climate and Meteorology	Climate change impacts to the leasing program and related activities are considered in a limited and qualitative manner. The treatment of this issue in the DEIS is insufficient.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.
103.	Brenna	Bell	—	77500	1	Climate and Meteorology	While the EIS did give some numbers of greenhouse gas emissions generated from the oil & gas extraction, these were not paired with any helpful analysis as to how these emissions would contribute to the already urgent climate change crisis. It also gave a few general cites to other, non-NEPA documents that discuss the global impacts of climate change. Was the BLM attempting to tier its discussion to these documents? If so, it cannot tier to non-NEPA analysis. Otherwise, generally citing other existing resources does not lift the obligation from the agency to include site-specific analysis and best available science in the body of its NEPA analysis. This is the record upon which a court will determine if the BLM took a hard look at all relevant issues.	Pages 3-6 through 3-9 of the Draft EIS showed estimated direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from the combustion of net fuels production exported to market. Because it is not possible to assign location-specific climate consequences to a single project or projects, GHG emissions were compared with emissions at larger scales to provide a context for decision makers and the public. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the synergistic effects of Coastal Plain development and climate change impacts on the natural and human environment. On the second concern raised in this comment, the NEPA assessment for this proposed action was not attempting to tier off non-NEPA documents; it incorporated them by reference.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
104.	Brenna	Bell	—	77500	2	Climate and Meteorology	Not only does the EIS need a more thorough analysis of the existing impacts of change and how the oil & gas projects will make significant cumulative additions to this crisis, it also must take a more thorough look at the impacts of climate change on the project area - beyond the difficulty of using large machinery when the permafrost melts. A very recent California case discussed the government's failure to take a hard look at how a changing climate exacerbates the adverse impacts of the proposed project, finding that to meet the hard look requirement, "NEPA requires an evaluation of the impact of climate change." <i>AquAlliance v. U.S. Bureau of Reclamation</i>, 287 F.Supages3d 969, 1028 (E.D. Cal. 2018). The court found that failure to consider climate change is a "failure to consider an important aspect of the problem" facing the proposed action. <i>Id.</i> at 1032, citing <i>Wild Fish Conservancy v. Irving</i>, 221 F.Supages3d 1224, 1233 (E.D. Wa. 2016) (Biological Opinion was arbitrary and capricious for failing to adequately consider impacts of climate change). In its EIS, the BLM similarly failed to recognize that an intact Arctic National Wildlife Refuge provides important habitat refugia for organisms stressed by a changing climate. AR14422, 17574. In this context, an ecologically intact ANWR takes on new significance, thus road construction, drilling, etc has an even greater impact.	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change. Regarding climate change impacts on ecological resources, impacts on these resources are discussed in Section 3.3 of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	Michael	Harris	Friends of Animas	78288	1	Climate and Meteorology	Nowhere are the impacts of climate change felt more acutely than the Arctic, which is warming at more than double the rate of the rest of the country. The draft EIS fails to assess how expanding fossil fuel development could exacerbate the impacts of climate change already at the front door of Arctic communities.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change in the Arctic or globally. Regarding Arctic warming in recent decades, it is within the bounds of natural warming that has occurred apart from human activities since the last major ice age.
106.	Withheld	Withheld	—	79888	9	Climate and Meteorology	The DEIS failed to address climate impacts. ?The DEIS fails to provide any analysis of how expanding fossil fuel development in the Arctic Refuge would exacerbate the impacts of climate change already occurring across the Arctic. The DEIA fails to address how to minimize the impacts on climate. Developing oil and gas in the Arctic Refuge is inconsistent with the urgent need to address climate change.?	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
107.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	14	Climate and Meteorology	the FEIS should acknowledge that specific oil development practices on Alaska's North Slope result in lower potential fugitive emissions compared to national estimates. ⁷¹ Generally, North Slope development projects must provide environmental enclosures for equipment, which aids in leak prevention. For example, emissions from pigging operations in North Slope projects are typically captured and collected. As another example, Alaska state requirements prohibit what is defined as "unnecessary and wasteful" venting and flaring of gas. These practices should be accounted for in the FEIS.	The BLM acknowledges this comment. Specific mitigation practices will be analyzed in site-specific NEPA analyses for future project development proposals.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
108.	Withheld	Withheld	—	80022	2	Climate and Meteorology	1. The BLM significantly underestimates carbon emissions resulting from drilling in the Arctic Refuge. The document does not address how expanding oil and gas development in this region of the Arctic will further exacerbate climate adaptation and mitigation challenges in the Arctic. The recent 4th National Climate Assessment report lays out increasing and substantial risks to the US economy, communities, and ecosystems. How will new oil and gas development in the Arctic Refuge contribute to and impact the risks and costs faced due to climate change in the US and globally?	The Draft EIS presents estimated GHG emissions in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action. The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment for those resources. The Final EIS cumulative effects sections have been updated, where appropriate, to include more information on the effects of leasing in combination with other reasonably foreseeable future actions, including climate change. The Fourth National Climate Assessment was released in November 2018, after the BLM completed the Draft EIS for publication. The BLM has reviewed this publication and compared it against the climate trends described in BLM 2018a, which were incorporated by reference. As these trends are similar, a sentence has been added to the Final EIS stating that the Fourth National Climate Assessment confirms the climate trend information reported in BLM 2018a.
109.	Jason	Schwartz	Institute for Policy Integrity	80216	4	Climate and Meteorology	BLM takes an inconsistent approach to time scales in its analysis, which misrepresents the damages caused by greenhouse gas emissions over the projected 70-year lifetime of fossil fuel development in the Coastal Plain. For direct emissions, the agency compresses the timeline of emissions to 37 years, based on the analysis for the Greater Mooses Tooth 2 project, even though Coastal Plain development is expected to extend 50-100 years, or longer.	The use of GMT2 proportional estimates for “direct” emissions in the Draft EIS is a conservative aspect of the analysis, in that the analysis presents estimates of annual emissions totals. If production happens over a longer period, the annual direct emissions from the Coastal Plain would be less, and the project would represent a smaller portion of state, national, and global emissions.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
110.	Jason	Schwartz	Institute for Policy Integrity	80216	5	Climate and Meteorology	members of the public would be unable to meaningfully distinguish between the climate risks of 56,739 versus 378,261 metric tons of CO ₂ e. While decisionmakers and the public certainly can discern that one number is higher, without any context it may be difficult to weigh the relative magnitude of the climate risks. In contrast, the different climate risks would have been readily discernible through application of the social cost of greenhouse gas metrics.	The BLM compared direct and indirect GHG emissions with emissions at larger scales to provide context for decision makers and the public as to the scale of potential emissions attributable to activities on the Coastal Plain. The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.
111.	Jason	Schwartz	Institute for Policy Integrity	80216	8	Climate and Meteorology	The DEIS also takes an arbitrarily inconsistent approach by monetizing economic benefits like royalties without applying an energy substitution analysis, while using substitution analysis to make downstream climate effects appear small.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
112.	Jason	Schwartz	Institute for Policy Integrity	80216	13	Climate and Meteorology	BLM considers all greenhouse gas emissions that is has quantified in the DEIS relative to carbon dioxide (expressed as tons of carbon dioxide equivalent); however, BLM should estimate emissions from methane leaks and account for these gases separately	The BOEM's modeling tool used for "indirect" lifecycle GHG emissions includes CO ₂ emissions, nitrous oxide emissions, and methane emissions. The proportioned GMT2 "direct" emissions also include all these gases; therefore, the data presented in the Draft EIS already include methane emissions from transport, refining, and consumption of petroleum products.
113.	Jason	Schwartz	Institute for Policy Integrity	80216	14	Climate and Meteorology	BLM monetized a number of other effects of the program, including royalties and labor income, and must give climate effects the same consideration. When an agency monetizes a proposed action's potential benefits-as BLM does here-the potential climate costs must be treated with proportional rigor. Additionally, simply because not every effect can be monetized does not mean that monetization is not a useful analytical tool.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
114.	Jason	Schwartz	Institute for Policy Integrity	80216	15	Climate and Meteorology	Yet the DEIS for the Coastal Plain leasing proposal overlooks all that and instead goes on to argue that "the dollar cost figure [from using the social cost of greenhouse gas metrics] is generated in a range and provides little benefit in assisting the BLM Authorized Officer's decision for program or project-level analyses, especially given that there are no current criteria or thresholds that determine a level of significance for social cost of carbon monetary values." Yet numerous other agencies have had no trouble applying the manageable range of estimates of the social cost of greenhouse gases to assess the significance of the climate impacts of their actions. NEPA requires BLM to use its judgment and available tools, and the agency cannot use uncertainty as a red herring to escape its statutory obligations.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
115.	Jason	Schwartz	Institute for Policy Integrity	80216	16	Climate and Meteorology	BLM quantifies that downstream greenhouse gas emissions from this program could reach millions of metric tons per year. ⁷⁴ But BLM refuses to take the straightforward next step of applying the social cost of greenhouse gas values to those quantified tons. Furthermore, BLM claims that “there are no current criteria or thresholds that determine a level of significance for social cost of carbon monetary values.” ⁷⁵ In making this claim, BLM implies that it cannot rely on its professional judgement to make a reasonable determination of significance, which is inconsistent with how BLM approaches other such determinations and with the practice of other federal agencies in making similar decisions. While there may not be a bright-line test for significance, the emissions BLM estimates for this program are clearly significant and warrant monetization. This is especially true since, once emissions have been quantified, the additional step of monetization through application of the Interagency Working Group's 2016 estimates entails a simple arithmetic calculation. ⁷⁶ It is difficult to understand how NEPA's mandate that an agency take a “hard look” at the environmental impacts of its actions can be satisfied if BLM fails to analyze the impacts of the greenhouse gas emissions that it quantifies.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
116.	Jason	Schwartz	Institute for Policy Integrity	80216	17	Climate and Meteorology	Finally, while BLM claims that there are no criteria to determine the significance of climate damages once they are monetized, 83 BLM routinely evaluates the relative importance of monetized benefits, weighing them against qualitative impacts. For example, the DEIS explains that a “drop in oil prices in late 2014 resulted in a significant decline in State government revenues” ⁸⁴ ; the DEIS reports that the portion of capital and operating costs to be paid to Alaskan companies would be “significant” ⁸⁵ ; and the DEIS weighs monetized values like income and revenue against qualitative impacts like noise in determining the “overall” and “lasting effects” on subsistence uses and resources. ⁸⁶ Translating over 5 million metric tons per year of operational, upstream, and downstream emissions into over \$250 million per year in climate damages certainly would have contextualized the impact, making it more accessible to the public and decisionmakers, and aiding BLM’s significance determination. It is arbitrary for BLM to ascribe significance to certain monetized values and yet claim it is impossible to determine the significance of monetized climate damages.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
117.	Withheld	Withheld	—	80930	5	Climate and Meteorology	The BLM significantly underestimates carbon emissions that would result from drilling in the Arctic Refuge. The DEIS only calculates the increase from oil demand predicted as a result of developing the Refuge. It does not account for burning all of the oil the BLM projects will be extracted, which is a much greater quantity. The Center for American Progress estimates that this proposal would result in emissions equivalent to that produced annually by 16 coal fired power plants - roughly 62 million tons. The DEIS completely fails to assess how expanding oil and gas development in the Refuge will further exacerbate climate adaptation and mitigation challenges in an Arctic that is warming at twice the rate of the rest of the country.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
118.	Megan	Williams	o.b.o. Trustees for Alaska	81368	20	Climate and Meteorology	The DEIS' findings are based on the Bureau of Ocean Energy Management's (BOEM) Market Simulation Model (MarketSim, primarily used for estimates of indirect greenhouse gas emissions from potential future development). We identify two major shortcomings with the findings reported in the DEIS. First, while acknowledging petroleum is a global commodity, the DEIS states that "the model considers only the U.S. supply and demand for petroleum" and admits "thus, the accuracy of the change (increase) in petroleum demand estimated from MarketSim projections is limited" (p. 3-7). Second, no information is provided on the model assumptions and parameter values essential to arriving at market response estimates, such as the source of baseline energy production and consumption data, short-term and long-term demand and supply elasticities, energy prices, model limitations, etc.	BOEM's MarketSim model uses the EIA Annual Energy Outlook baseline data in the model. The model estimates the impacts on global oil markets and in doing so calculates changes in U.S. demand for oil, natural gas, coal, and electricity from others sources, as well as the global change in oil demand. BOEM recognizes the uncertainty in its projections and the further uncertainty in the attempt to model the entire set of energy market substitutions that would occur globally. Details on the BOEM model can be found in the documentation for the model: https://www.boem.gov/ESPIS/5/5612.pdf https://www.boem.gov/OCS-Report-BOEM-2016-065/ .

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119.	Brook	Brisson	Trustees for Alaska	81368	23	Climate and Meteorology	global and national oil and gas price trends and forecasts were not mentioned in the DEIS. The fact that there is very little chance that oil production from the Coastal Plain would have any significant effect on global oil prices or gas prices for consumers should have been noted. The effect on national oil prices would be brief and minimal at best, largely because prices are determined in the global market. At best, any short-term decreases in world (and thus domestic) oil prices associated with production areas currently closed to development "are likely to be on the order of one percent, and would thus not have a significant impact on prices that consumers pay at the gasoline pump now or in the future."20	The BLM acknowledges this comment. The BLM agrees that production from the Coastal Plain region will not affect global oil prices. The Economy section was focused on potential economic impacts on jobs, income, and revenues at the local, regional, and statewide level. Impacts on national and global petroleum markets are not part of the analysis.
120.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	34	Climate and Meteorology	In this analysis BLM should also consider the countervailing impacts that oil and gas leasing and development have on climate change at the local level. Across the North Slope, this translates into funding for scientific research, community infrastructure and other activities which aid the local climate change needs and priorities.	The BLM acknowledges this comment. Currently, there are no regulations or lease stipulations requiring that potential federal or state revenues from leasing and post-leasing activities in the Coastal Plain be used to address climate change impacts at the local level.
121.	Withheld	Withheld	—	55252	3	Climate and Meteorology	on page 3-9, the DEIS talks about the area of Arctic ice extent, but it does not discuss the changes in the thickness or average age of the ice. This information is crucial to understanding polar bear, walrus and seal impacts going forward.	Text has been added to the Final EIS to provide a source for information on sea ice thickness. The seasonal impacts of the ice sheet position on local marine mammal populations, whether positive or negative, will occur with or without development of the petroleum resources of the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
122.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	4	Climate and Meteorology	Furthermore, the DEIS notes that “[e]ach of the hypothetical development scenarios could affect over 2,000 acres of soils and permafrost.” Id. at 3-48. However, while the DEIS contemplates oil-and-gasrelated permafrost loss, it neglects to discuss the corresponding climate impacts of this permafrost reduction. The FEIS should estimate the GHG emissions from permafrost loss associated with the Proposed Action.	The effects of development would not be the total loss of permafrost over a 2,000-acre area. There could be minor increases in active layer (thawed layer) thickness during the summer, and less rapid refreeze during the fall. This disturbed area represents less than 0.13 percent of the 1.6 million-acre Coastal Plain proposed leasing area. The GHG emissions associated with any slight permafrost degradation over this 2,000-acre development area cannot be accurately estimated, but it would be small in comparison with other global and regional GHG emissions.
123.	Withheld	Withheld	—	59766	1	Climate and Meteorology	The pollution that would ensue is significantly minimized in the DEIS, both in terms of the carbon that would be released into the atmosphere, as well as the impact that this unnecessary exploitation would have on the limited supply of fresh water.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
124.	Steven	Amstrup	Polar Bears International	81368	112	Climate and Meteorology	Natural gas and petroleum systems are the biggest contributor to methane emissions in the United States, accounting for close to one third of all methane emissions. ⁷³ Although it has a relatively short atmospheric lifetime of about a decade, methane is nonetheless a potent greenhouse gas with impacts concentrated in the near-term. EPA assumes that each molecule of methane is 28-36 times as potent as carbon dioxide (CO ₂) over a 100-year time horizon and 84-87 times as potent as CO ₂ over a 20-year time horizon. ⁷⁴ BLM should consider the 20-year global warming potential for methane since shorter timeframes more accurately reflect the climate-forcing impacts of methane emissions.	The primary concern with GHG emissions is long-term climate change, leading to rising ocean levels and gradual warming of the oceans and atmosphere over longer time scales; therefore, the 20-year horizon effect of GHGs is less of a concern than the 100-year horizon. The primary moderator of Earth’s temperatures is the oceans, which embody the vast majority of the thermal inertia of the whole land-ocean-cryosphere-atmosphere system. It takes time to change the bulk average ocean temperature because of its huge thermal inertia; therefore, a relatively short-lived GHG like methane cannot have a large impact on global climate. Nonetheless, if the BLM considers

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124. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the 20-year GWP horizon, and the commenter's multiplier of 2.7 is correct for methane (compared with the 100-year horizon), the methane portion of the Coastal Plain development-related GHG emissions would be 5 percent (methane portion of CO₂e from Draft EIS) multiplied by 2.7, or 13.5 percent of the CO₂e for a 20-year horizon. Given the GHG estimates for the Coastal Plain program area are order of magnitude estimates (given the uncertainty in recoverable oil), this marginal change would not appreciably affect the estimated GHG emissions and the portion of national or global emissions represented by the development. Finally, regarding methane's overall importance to the climate, modeled estimates of methane's radiative forcing (RF) over the last several decades show that it has essentially flattened out, despite the large increase in U.S. drilling activity in the last decade, and the increased production of natural gas. In contrast, the calculated RF for CO₂ continues to increase rapidly (see Figure 2-5 of the Fourth National Climate Assessment); therefore, it is more important to focus on CO₂ emissions and the effects of all GHGs combined over long (100-year) time horizons.

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125.	Steven	Amstrup	Polar Bears International	81368	114	Climate and Meteorology	product of fossil fuel combustion - may have significant impacts on climate change, especially in the Arctic region. According to the Arctic Council, an intergovernmental forum of Arctic States, there is sufficient evidence to support the reduction of black carbon emissions as a means to slow the rate of warming in the Arctic over the next few decades. ⁷⁶ And since black carbon is a component of particulate matter, and pollutants that are co-emitted with black carbon are also constituents of PM, black carbon also adversely impacts air quality and health. Primary emissions sources of black carbon in the oil and gas industry include diesel engines, e.g., associated with seismic surveying, drilling, etc., and flares.	Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.
126.	—	—	Alaska Department of Natural Resources	94102	51	Climate and Meteorology	26 Chapter 3, Page 3-4 Justify analysis The statement that dispersion and turbulence increase with wind speed, should be amended to read'thereby locally decreasing air pollutant concentrations resulting from an emitted plume of pollutant.' The statement otherwise is too broad and is not supported by any of the information provided.	The statement is not too broad, due to the basic principle that increasing wind speed alone, with other factors held constant, will decrease pollutant concentrations in the plume at all distances downwind, not just locally.

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127.	—	—	Alaska Department of Natural Resources	94102	52	Climate and Meteorology	27 Chapter 3, Page 3-6 Justify analysis Paragraph two on this page discusses "Direct GHG Emissions from Future Development" and appears to use the ConocoPhillips GMT-2 project as a scaling proxy for the proposed future development in the ANWR Coastal Plain. It is not clear why the GMT-2 project is used as a proxy, because it was not discussed in any detail in the hypothetical development scenario in Appendix B. It would make the hypothetical development scenario much easier to understand if it was compared in size and impacts to a similar project on the North Slope.	The GMT2 project was used for scaling because it represents one of the more recent projects for which direct GHG emissions were inventoried. Larger-scale North Slope projects are generally much older, and the GHG emissions were not inventoried on those.
128.	—	—	Alaska Department of Natural Resources	94102	53	Climate and Meteorology	28 Chapter 3, Page 3-6 Justify analysis - inconsistencies The last sentence on this page notes that "This is because the Coastal Plain development would still represent approximately 9 to 59 times the estimated oil production and therefore 9 to 59 times the direct GHG emissions of the GMT2 development." This statement implies a very wide range of possible impacts appears to imply that the proposed development could be up to 60 times larger than the proposed GMT-2 project. It is not clear how a development of this magnitude could occur on the 2,000 surface acres allowed by the Tax Act. Please explain.	Because the development could occur over a period of many years, acreage allocated to older developments would become available again once those developments were shut down and reclaimed. Based on BLM's interpretation of the Tax Act, no more than 2,000 acres of surface development would occur at any one time, but the BLM would not place a restriction on total acreage that could be used for development overall as long as no more than 2,000 acres is disturbed at one time. For example, based on projected production rates for GMT2, estimated total production of 170 million barrels could be reached within 15 years, after which the wells would be plugged and the site reclaimed. No change.
129.	Kevin	Kane	Sierra Club, Western Watersheds	96216	2	Climate and Meteorology	Effects of escape methane and all other gases must be analyzed in terms of climate and air quality.	GHG estimates provided in the Draft EIS include methane emissions.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
130.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	95	Climate and Meteorology	Climate Change. The DEIS misrepresents the rapid change in the Arctic's climate by presenting temperature and precipitation data as monthly averages without including historic data. (DEIS, at Table 3-1). Data and down-scaled global climate models from the Scenarios Network for Alaska and Arctic Planning, at the University of Alaska-Fairbanks, show a very different picture, as demonstrated in figures 5 and 6:	The purpose of presenting the monthly climate normals is to present the typical current climate conditions (most recent three decades), not to address "climate change." Climate trends for the region are summarized in the text discussion of Section 3.2.1 of the Draft EIS, and more detail on these is provided by reference to data on the UAF/ACRC website. A down-scaled climate model output is not useful, as it fails to accurately reproduce past climatic conditions at regional scales. However, the observed temperature trend data from UAF are informative and are appropriately referenced in this section of the Draft EIS.
131.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	98	Climate and Meteorology	The DEIS must accurately represent and consider these historical and projected future changes. Additionally, the DEIS fails to cite more current available sources, which provide more up-to-date information. ⁶⁹ (DEIS, at 3-9).	The purpose of presenting the monthly climate normals is to present the typical current climate conditions (most recent three decades), not to address "climate change." Climate trends for the region are summarized in the text discussion of Section 3.2.1 of the Draft EIS, and more detail on these is provided by reference to data on the UAF/ACRC website. A down-scaled climate model output is not useful, as it fails to accurately reproduce past climatic conditions at regional scales. However, the observed temperature trend data from UAF are informative and are appropriately referenced in this section of the Draft EIS.

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132.	Mary	S.	—	82785	1	Climate and Meteorology	Rising temperatures in the Arctic are established scientific fact and it is established that the sea ice in the Arctic is melting at a more rapid rate than in previous decades. As stated in the EIS, temperature records taken from the weather station in Utqiagvik on the North Slope, "show an increase in annual average temperature of 6.3 degrees F from 1949 to 2016; a 5.9 degree F increase has occurred since the PDO shift in 1977." Furthermore, "...it is likely that a reduction in ice cover along the north coast of Alaska has had a disproportionate effect on temperature trends since 1977..." (pg. 74). Reduction in sea ice is the biggest threat to the continued survival of the SBS stock of polar bears commonly found within the program area. Any oil and gas development would contribute to continued rising temperatures and reduction of sea ice in the Arctic by contributing to the greenhouse effect. The reference to the "so-called greenhouse effect" on pg. 75 is inaccurate. The greenhouse effect is established scientific fact and the words "so-called" must be removed.	Climate trends, including warming temperatures and melting sea ice, are incorporated by reference on page 3-2 of the Draft EIS; the ongoing and projected effects of climate change on Arctic species are described in detail in the Climate Change subsections of Section 3.3, Biological Resources. The BLM acknowledges the proposed action's contribution to climate change in the form of GHG emissions and thus quantifies and presents these emissions. The use of the phrase "so-called" was not intended to imply that there is no atmospheric greenhouse effect; it has been deleted from the Final EIS.

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133.	Withheld	Withheld	—	82848	2	Climate and Meteorology	I am also concerned that the draft EIS does not adequately consider climate change in the development of the draft EIS. While the EIS describes (in paragraph form) some of the projected changes to the region, in developing an appropriate plan it is critical that the EIS consider potential future changes in the region due to climate change in a spatially explicit fashion. Numerous research efforts have developed spatially explicit projections for how the North Slope may be affected by climate change into the future and these mapping efforts include vegetation change and permafrost change projections. Given that the North Slope of Alaska is one of the most rapidly warming regions in the world, and that it will continue see dramatic change even during the lifespan on the proposed leases, it is critical that the EIS effort include spatially explicit climate change projections in the EIS. The BLM needs to consider not only where critical habitat and resources are located today, but where they are projected to be located fifty years from now given rapid climate change. In the North Slope of Alaska, significant climate change impacts will be observed during the lifespan of these leases.	It is speculative to perform a spatial modeling analysis of climate-related parameters over a 70-year time horizon given the uncertainties in such projections. The state-of-the-science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions. "In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible." (IPCC Third Assessment Report [2001], Section 14.2.2.2, page 774).
134.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	1	Climate and Meteorology	NEPA-required environmental review for federal actions, such as the Proposed Action, that are anticipated to lead to significant emissions of GHGs must estimate both direct and indirect GHG emissions (See e.g. WildEarth Guardians v. U.S. Bureau of Land Mgmt., 870 F.3d 1222, 1228-29, 1234-35 (10th Cir. 2017) (combustion of coal is indirect effect and must be included in the EIS)). In doing so, federal courts have held that agencies must consider "the best available science" and consider climate change information in a "meaningful or logical	Regarding the claim of underestimated emissions, the Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. Regarding production alternatives, all of them are expected to result in

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
134. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	way.” (AquAlliance v. U.S. Bureau of Reclamation, 287 F. Supages 3d 969, 1031 (E.D. Cal. 2018) (citing Wild Fish Conservancy v. Irving, 221 F. Supages 3d 1224, 1233 (E.D. Wash. 2016)) (emphasis original)). Moreover, when conducting an analysis of impacts, agencies cannot “put a thumb on the scale” by selectively considering or quantifying negative impacts. (Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin., 538 F.3d 1172, 1198 (9th Cir. 2008)). In direct conflict with past practice and guidance from federal courts, the DEIS distorts the climate change analysis by: (i) Significantly underestimating GHG emissions, including by neglecting to consider the impacts of the Proposed Action with respect to the continued operation of the Trans-Alaska Pipeline System and melting permafrost; and (ii) Failing to present GHG emissions data in a meaningful or logical way, including by neglecting to estimate GHG emissions for each alternative, presenting misleading annual emissions figures, and using metrics that obscure the significance of the Proposed Action’s GHG emissions.	total production within the range of 1.5 to 10 billion barrels of oil over the lifetime of the development. The Draft EIS analysis provided GHG estimates commensurate with these bounds. Given that GHG emissions will be essentially proportional to production, the reader can estimate the GHG emissions of any hypothetical production amount between these bounds. Estimates of recoverable oil by alternative are not available, but EIS Section 3.2.6, Petroleum Resources provides a qualitative discussion of the potential for reduced production among Alternatives B, C, D1, and D2. Surface access to significant portions of the Coastal Plain area would be precluded under the more restrictive options, Alternatives D1 and D2; however, much of the potentially non-leased portion of the program area under these alternatives (34 percent of the total area) has a lower production potential. Also, horizontal drilling from adjacent areas can reach some acreage restricted from surface development; therefore, production potential, and related greenhouse gas emissions, would be only marginally reduced under Alternatives D1 and D2, and are expected to be essentially unchanged between Alternatives B and C. Regarding TAPS, it is regulated by state and federal authorities in terms of its safety and viability for continued use. TAPS is maintained to provide for long-term continued use. Regarding annual vs. lifetime emissions, the GHG emissions are presented on an annual basis to

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134. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	allow a comparison with global, US, and Alaska emissions, which are reported annually. Total GHG emissions for the life of the development, prior to global supply and demand discounting, are provided in the Final EIS in Appendix R, Table R-3.
135.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	2	Climate and Meteorology	The status of TAPS is strongly correlated with the future of Alaskan oil production, and is thus an impact that must be factored into the analysis of environmental impacts from Coastal Plain leasing. The FEIS should thus consider the Proposed Action's impacts on TAPS and resulting GHG emissions in both (i) the "baseline" of the no-action Alternative A, and (ii) the analysis of the action alternatives (B, C, D1 and D2). As described by BLM, "Alternative A [the no-action alternative] is being carried forward for analysis to provide a baseline for comparing impacts under the action alternatives, as required by the [Council on Environmental Quality ("CEQ")] NEPA regulations." (BUREAU OF LAND MANAGEMENT, COASTAL PLAIN OIL AND GAS LEASING PROGRAM: DRAFT ENVIRONMENTAL IMPACT STATEMENT, at Vol. I, 2-2 (Dec. 2018) [hereinafter, "DEIS"]; see also 40 C.F.R. § 1502.14(c)). As discussed above, absent new supply into TAPS, the no-action alternative baseline should reflect the strong possibility that TAPS would become inoperable in the coming years. By ignoring the future of TAPS in the analysis of Alternative A, the DEIS omits a crucial consideration and distorts the baseline against which the environmental impacts of the Proposed Action are measured. If TAPS were to shut down, tens of millions of barrels of oil would be either stuck in Alaska or would need to be transported to market by	The continued supply of oil needed to keep TAPS in operation does not depend on the proposed action. There are several other in-progress and planned new developments on the North Slope that can keep TAPS economically viable. TAPS economic viability is therefore not dependent on the proposed action versus no-action decision. TAPS is maintained to provide for long-term continued use.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	other, potentially costlier and higher emitting methods. The FEIS' Alternative A "baseline" analysis should account for the impacts on GHG emissions from the projected closure of TAPS. This would allow for a more accurate calculation of the relative increase in emissions from the Proposed Action.	(see above)
136.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	3	Climate and Meteorology	The FEIS should also address the Proposed Action's impact on GHG emissions from the continued operation of TAPS in the analysis of the action alternatives (Alternatives B, C, D1, and D2). Shutting down TAPS would significantly reduce the economic feasibility of oil production in Alaska and would likely reduce GHG emissions. As a corollary, keeping TAPS open would result in higher GHG emissions relative to a TAPS-free baseline. Insofar as the action alternatives would increase the likelihood of TAPS remaining open and operational (by facilitating additional oil and gas production and throughput for the pipeline system), they would foreseeably lead to higher GHG emissions compared to the no-action alternative. Because this issue is not addressed in the DEIS, it likely underestimates the impact the action alternatives would have on GHG emissions and, consequently, climate change. If additional throughput from Coastal Plain oil has the effect of keeping TAPS operational, the net increase in oil production (and resulting GHG emissions) would be much higher than is reflected in the DEIS. The inextricable tie between the issuance of oil and gas leases on the Coastal Plain and the future of TAPS should be reflected in the FEIS in order to fully assess the environmental impacts of the Proposed Action.	The continued supply of oil needed to keep TAPS in operation does not depend on the proposed action. There are several other in-progress and planned new developments on the North Slope that can keep TAPS economically viable. TAPS economic viability is therefore not dependent on the proposed action versus no-action decision. TAPS is maintained to provide for long-term continued use..

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137.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	5	Climate and Meteorology	The DEIS neglects to calculate GHG emissions for each alternative considered, despite the directive in the NEPA implementing regulations for agencies to present the alternatives analysis in a comparative form so that the environmental impacts of the alternatives can be reasonably compared. See 40 C.F.R. § 1502.14 (describing the analysis of alternatives as “the heart of the environmental impact statement”). Instead, the DEIS estimates one value for the minimum and maximum carbon dioxide equivalent (“CO ₂ e”) emissions from Coastal Plain oil and gas production, asserting that “hypothetical production rates and estimated ultimate recovery are not expected to change significantly under any of the alternatives.” DEIS, supra note 9, at Vol. II, Appendices B through O, B-18. However, without further elaboration this is not a logical explanation. For example, Alternatives D1 and D2 offer only 1,037,200 acres for lease, compared to 1,563,500 acres under Alternatives B and C. If the total ultimate recovery is the same across each alternative, Alternatives B and C would not recover any additional oil in the 526,300 acres not leased under Alternatives D1 and D2. This raises the question as to why, then, BLM would offer those additional areas for lease under any alternative if they are estimated not to contain or lead to additional recoverable oil and gas. Relatedly, Alternative C has 932,500 acres subject to a no surface occupancy (NSO) restriction whereas under Alternative B, only 359,400 acres are subject to an NSO restriction. Prohibiting surface occupancy forces producers to use more expensive extraction techniques, such as directional drilling. See, e.g., Timothy Fitzgerald, Evaluating Split	The range of GHG emission estimates presented encompasses the potential differences in recoverable oil among alternatives. Portions of this comment dealing with the basis for selection of alternatives for assessment in the Draft EIS are addressed in the discussion of alternatives elsewhere in the Draft EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
137. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Estates in Oil and Gas Leasing, 86 Land Economics 294, 308 (May 2010), https://www.jstor.org/stable/pdf/27821425.pdf?refreqid=excelsior3Ac01792291aa4bafbe38755e2f9e4c264 . In the FEIS, BLM should explain its assumption that the same amount of oil could be profitably recovered with such techniques despite the higher cost of directional drilling. Because the DEIS estimates GHG emissions based on economically recoverable oil-and not based on total reserve-higher recovery costs could result in fewer GHG emissions under Alternative C compared to B. If total oil and gas recovery is different across alternatives, the FEIS needs to detail the estimated GHG emissions of each.	(see above)
138.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	6	Climate and Meteorology	The total projected GHG emissions from the Proposed Action, both direct (from construction, extraction, and transportation) and indirect (from downstream combustion of oil and gas), is not contingent on the assumed production duration for the Coastal Plain leases. DEIS, supra note 9, at Vol. I, 3-6. However, because the DEIS presents GHG impacts as annual emissions, compared to annual emissions at the United States and global level, the assumed production duration influences the perception of the significance of the Proposed Action's impact on GHG emissions. For example, doubling the number of production years halves the annual emissions. In this instance, presentation matters: misleading or arbitrary assumptions are insufficient to meet NEPA requirements. City of Romulus v. Wayne Cty., 392 F. Supages 578, 594 (E.D. Mich. 1975), order dissolved, (E.D. Mich. Oct. 31, 1975), vacated, 634 F.2d 347 (6th Cir. 1980). The DEIS presents annual GHG emissions from the Proposed Action based on a 70-year	Halving or doubling the production period would correspondingly double or halve the annual GHG estimates, assuming the amount of recoverable oil is a fixed amount. Given the recoverable oil is assumed to be a fixed amount, the ultimate consequences in terms of the total GHG emissions is essentially the same. The point of estimating annual GHG emissions is to provide a scale for comparison of the proposed action with statewide, national, and global annual emissions. Factor of two changes in the annual rate of GHG emissions are not relevant, given the outcome for the global atmosphere is essentially the same when production is complete.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
138. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	construction, drilling, and production period. DEIS, supra note 9, at Vol. I, 3-7. However, this long a production period is not supported by other estimates in the DEIS. For example: * As described in Appendix B, “the timeframe for production could be more or less than 50 years given the speculative nature of the development scenarios” and peak production from the Coastal Plain “is anticipated at some point before 50 years, potentially as early as 20 years after the first lease sale.” DEIS, supra note 9, at Vol. II, Appendices B through O, B-7. Production from a field could continue, at declining rates, for up to 35 years after peak production is reached; Id. and * The DEIS assumes that the life of production facilities or access roads for the Coastal Plain will be approximately 50 years. The FEIS should assume a shorter production duration that better reflects the discussion in the DEIS. If the FEIS assumes a production duration of 35 years, its estimated annual CO₂e emissions range would double to 1.4 - 10.0 million metric tons. Relatedly, the FEIS should: 1. Separate estimated annual GHG emissions for pre-production and post-production years. BLM estimates that direct emissions from construction and drilling during pre-production years would be around 85 times smaller than indirect emissions from consumption, which only occur during production years. DEIS, supra note 9, at Vol. I, 3-8 (0.06 million metric tons for direct emissions and 5.0 million metric tons for indirect emissions in Table 3-5). By lumping the pre-production and production years together, the DEIS distorts the estimated annual GHG emissions rate. 2. Present the total estimated GHG emissions over the lifespan of the Proposed Activity without comparison	(see above)

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138. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	to annual figures. This approach would be consistent with BLM's approach in the EIS for the nearby Greater Mooses Tooth 2 Development Project (The DEIS' prediction of GHG emissions per barrel of available oil from Coastal Plain oil and gas production is based on estimates that were calculated for the nearby Greater Mooses Tooth 2 GMT 2 Development Project ("GMT2"). However, the GMT2 project was able to utilize existing infrastructure, which does not exist in the Coastal Plain, to support production. The FEIS should account for this discrepancy and adjust projected emissions from the Coastal Plain leasing up to reflect the need for new infrastructure). Such changes would improve the transparency and utility of the information presented in the FEIS. Such changes would improve the transparency and utility of the information presented in the FEIS.	(see above)

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139.	Aladdine	Joroff	Harvard Law School Emmett Environmental Law & Policy Clinic	82876	8	Climate and Meteorology	more meaningful evaluation of the significance of effects of leasing in the Coastal Plain would use additional metrics to evaluate the Proposed Action's impacts. For example, rather than compare projected GHG emissions from the Proposed Action to total emissions in the United States, the FEIS should explain the emissions in the context of energy consumption in the United States. For example, in 2017, the United States consumed a total of 7.28 billion barrels of petroleum products (FAQ: How much oil is consumed in the United States?, U.S. ENERGY AND INFO. ADMIN. (Oct. 3, 2018), https://www.eia.gov/tools/faqs/faq.php?id=33&t=6) and CO2 emissions from these products represented 81 percent of total U.S. transportation sector CO2 emissions and 30 percent of total U.S. energy-related CO2 emissions. FAQ: How much carbon dioxide is produced from U.S. gasoline and diesel fuel consumption?, U.S. ENERGY AND INFO. ADMIN. (Dec. 27, 2018) https://www.eia.gov/tools/faqs/faq.php?id=307&t=10. Leasing on the Coastal Plain is expected to produce up to 10 billion barrels of oil equivalent. Consequently, indirect GHG emissions from oil and gas extracted from the Coastal Plain could represent more than 30 percent of total U.S. energy-related CO2 emissions in one year.	Comparison of estimated emissions with state, national, and global emissions is an accepted method of analysis for providing context to decision makers and the public in a NEPA analysis.

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140.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	35	Climate and Meteorology	In order to address this concern more fully, BLM should include the following facts with respect to resource development in the Arctic and its impact on global climate change: ? Oil produced from the Program Area under the United States robust environmental regulatory regime will displace oil imported from areas with less strict environmental requirements. ? The average barrel of Alaska North Slope crude produces 564 kilograms of CO2 throughout its life, oil produced from the Program Area is estimated to only contribute an additional 0.5 kilograms per barrel. ? Emissions from industry sources in Alaska saw a decline of approximately 17% from 2005- 2015, with gross emissions reduced by approximately 24% and net emissions reduce by 33% over the same period. ³⁶ ? Alaska ranks 40th in emissions amongst states and Washington D.C. ³⁷ 36 Alaska Greenhouse Gas Emissions Inventory 1990-2015. Alaska Department of Environmental Conservation. Pg 13.	While the Alaska-specific data in this comment and the referenced report are interesting, they provide additional detail that is not needed in the EIS for the proposed action. The proposed action comparisons with Alaska, U.S., and global GHG emissions are already presented in the Draft EIS; they provide the appropriate context.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
141.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	38	Climate and Meteorology	We also feels that it would be beneficial, based on testimony shared in recent public meetings on the DEIS, for the BLM to further expand their analysis of greenhouse gas emissions (GHG) and "upstream" carbon impact of develop-ment and production of oil and gas in the Coastal Plain. While the DEIS does ad-dress that developing ANWR to its full potential will not actually add 390 thou-sand barrels per day to the world's oil consumption, there could be more clarity around resource development in the Arctic and its relationship to climate change, including: ? North Slope crude will offset dirtier crude produced elsewhere ? North Slope's legacy of environmental responsibility is the gold standard among the world's prolific oilfields. ? The most effective way to reduce greenhouse gases worldwide is to re-duce demand through changing individual habits ? While our communities bear the brunt and are on the front lines of climate change, our communities and industry activity on the North Slope contribute very marginally to global GHG emissions.	The BLM cannot be sure whether North Slope crude would offset dirtier crude produced elsewhere, but it does agree that the North Slope contributes marginally to global GHG emissions, as demonstrated in the Draft EIS. The BLM agrees that coastal communities on the North Slope may bear a greater impact than other U.S. communities due to climate change, regardless of the causes of that change.
142.	Matt	Krogh	Stand.earth	83321	6	Climate and Meteorology	It is not sufficient for BLM to merely mention that climate change literature exists? a DEIS needs to also include an analysis of cumulative climate impacts associated with drilling in the Arctic Refuge and the subsequent transport, shipping, refining, and consumption of the oil produced. As the courts have made clear, mere references to nonNEPA documents is not enough.	The BLM has referenced both non-NEPA and NEPA documents as sources for information used in this Draft EIS. As the BLM has done in the Draft EIS, it is appropriate to highlight specific impacts that climate change may have or is having in the region affected by the proposed action.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
143.	Matt	Krogh	Stand.earth	83321	8	Climate and Meteorology	As is typical of this DEIS, the climate information is outdated and relies on previous analyses done on other areas outside the Arctic Refuge. This is concerning given that the pace of global warming is not uniform across the globe? the polar regions are experiencing the effects of climate change at a faster rate.	The BLM has reviewed more recent literature, such as the Fourth National Climate Assessment, which confirms the trends data incorporated by reference in BLM 2018. In addition, the climate data for the Arctic Refuge do not differ substantially from other North Slope developments recently assessed; therefore, this information is still relevant.
144.	Matt	Krogh	Stand.earth	83321	9	Climate and Meteorology	The DEIS also fails to meaningfully account for and analyze the cumulative impacts of greenhouse gas emissions associated with oil and gas development in the coastal plain. This omission includes the downstream emissions caused by consumption of the extracted oil and gas. As noted: "Even though greenhouse gas emissions from the proposed program may look minor when viewed on scale of the global climate crisis, when considered cumulatively with all of the other GHG emissions from BLMmanaged land, they become significant and cannot be ignored."	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
145.	Withheld	Withheld	—	84753	1	Climate and Meteorology	The IPCC SP15 report released in October 2018 (https://www.ipcc.ch/sr15/) outlines the consequences of failing to constrain global warming to levels below 1.5°C. Specifically, it explains the importance of drastically reducing CO2 emissions in the coming decade. The Coastal Plain Draft EIS fails to take into account how the development of petroleum from ANWR would contribute to Climate Change, and specifically how it will make it more difficult to achieve the carbon reductions necessary to minimize the impacts of Climate Change in the coming decade.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
146.	Withheld	Withheld	—	84826	1	Climate and Meteorology	The effects of fossil fuel development upon climate change must be considered as a direct consequence of leasing actions. Why permit leases if not to develop the land? The EIS failed to explore in detail the effects upon localized climate changes and the contribution to global climate changes. Greenhouse emissions do not stay in one place. The EIS also failed to consider the future effects of fossil fuel extraction upon the climate 10 years from now as the oil comes on line and how these effects will alter the environment, wildlife and ecology of the area.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project.
147.	Daniel	Varsano	—	91130	1	Climate and Meteorology	The EIS dramatically understates the impact on climate change development this oil field would cause. This is a serious issue with global consequences, any new hydrocarbon extraction project needs a realistic assessment of it's impacts on climate change. This EIS is incomplete and misleading on this subject. The EIS understates the likelihood and possible impacts of oil spills. Again, there needs to be a realistic and unbiased assessment of this impact	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally. Oil spill history and statistics for existing Noprh Slope developments are discussed in Section 3.2.11 of the Final EIS.
148.	Janee	Middlesworth	—	91927	4	Climate and Meteorology	The DEIS underestimates the carbon pollution\ added, and fails to address the implications of exacerbating the climate crisis.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
149.	Stephen	Harvey	—	92094	2	Climate and Meteorology	I am writing to comment on section 3.2.1 Climate and Meteorology. Table 3-5 quantifies indirect emissions, but it does not put those emissions into context. Representative Concentration Pathway (RCP) scenarios describe four different 21st century pathways of greenhouse gas (GHG) emissions and atmospheric concentrations, air pollutant emissions and land use*. RCPs show how decisions regarding management of GHG emissions will have implications for the entire 21st century. This context of which climate scenario the earth is headed towards is important to comprehend. I think the EIS should describe the RCP scenarios, depict which scenario the globe is currently on, and identify which RCP scenario(s) each action alternative best aligns with. This would include direct and indirect GHG emissions of each action alternative over the next 50 years. It is important to know what GHG emission pathway the globe headed towards and RCP scenarios are the internationally accepted standard. The draft EIS methodology of only presenting annual emissions and percent contribution to global emissions does not adequately describe the impact to climate. Adding RCP scenarios would help readers better understand the context of GHG emissions and climate. Thank you for your time and consideration. * IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pages	The requested analysis is outside the scope of this EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
150.	Withheld	Withheld	—	92095	2	Climate and Meteorology	The DEIS fails to provide any analysis of how expanding fossil fuel development in the Arctic Refuge would exacerbate the impacts of climate change already occurring across the Arctic.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
151.	Withheld	Withheld	—	92577	1	Climate and Meteorology	Any actions taken to open the Arctic Wildlife Refuge to oil and gas drilling will have negative impacts on all Americans due to the interconnectedness of ecosystems and the widespread destruction increases in greenhouse gasses and melting of the permafrost will cause.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
152.	Withheld	Withheld	Government of the Northwest Territories	92862	57	Climate and Meteorology	The BLM's discussion and use of climate change in its analysis/assessment of the leasing program is contradictory throughout the EIS, despite the EIS initially stating that it will only rely on historical data rather than forward-looking projections for analyzing the interactions between the environment and this project even though the project is projected to last for up to 70 years. The EIS expressly states that it will not consider forward-looking projections of local weather, ocean levels, etc. based on current, widely-accepted projections based on climate change. As the vast bulk of research and analysis regarding climate change suggests that historical weather and other patterns will be altered in the immediate future, historical data cannot predict a future project's and the climate's impacts on each other and so is irrelevant; relying on this data exclusively is incapable of accurately predicting these impacts. Also, as the arctic and coastal regions are predicted to be especially likely to experience significant impacts from climate change, this analysis ignores prospective changes to the area in which the project will take place without offering an accurate, convincing justification for doing so.	The state of the science is not capable of predicting whether there will be detrimental impacts from specific GHG emissions. "In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible" (IPCC Third Assessment Report [2001], Section 14.2.2.2, p. 774).
153.	Withheld	Withheld	Government of the Northwest Territories	92862	58	Climate and Meteorology	Additionally, the EIS later cites likely prospective changes based on climate change to suggest, among other things, that the project may have a positive impact on caribou forage by decreasing the duration of snow cover. Dismissing climate change to ignore its potential negative interactions with the project, but later citing it to support allegedly positive aspects of the program is directly contradictory.	The BLM has attempted in this EIS to provide a balanced approach to the resource-specific climate change analyses and feels it is not contradictory to point out both the positive and negative impacts of potential climate change.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
154.	Withheld	Withheld	Government of the Northwest Territories	92862	59	Climate and Meteorology	The GNWT recommends climate change be considered in determining how key aspects of the environment, like ocean levels, rain fall, wind patterns, and other aspects of the environment; therefore, climate change must be addressed and discussed throughout the EIS in a consistent manner to determine what the likely impacts on/interactions between the environment and the project will be during its future life. The EIS should consider data on climate change regarding the prospective changes to the environment in which the project will take place and how this will affect its projected environmental impacts.	The BLM agrees with this comment and has sought to present this kind of analysis in the Draft EIS.
155.	Karen	Bollinger	—	94054	6	Climate and Meteorology	· The BLM significantly underestimates carbon emissions that would result from drilling the Arctic Refuge, estimating only 56,739 to 378,261 metric tons of annual direct GHG emissions (from extraction, transport, etc) and 0.7 to 5 million metric tons of annual indirect GHG emissions (from combustion and downstream use of the oil) - measured in CO2 equivalent. (Volume 1, Table 3-5 p.78) · This is a very misleading set of numbers and is calculated only from the increase from oil demand that the analysis predicts will result from developing the Refuge. It does not account for burning all of the oil they project will be extracted. That number is much larger. CAP estimates that the equivalent to the annual emissions of 16 coal fired power plants would be emitted - roughly 62 million tons.	The comment questions the Draft EIS analysis methodology, which considers only the incremental global amount of petroleum production that could result from the proposed leasing, rather than looking at the total production as if it were isolated from global markets. The Draft EIS appropriately provides a comparison of the GHG emissions of the proposed action versus the No Action Alternative (i.e., the incremental GHG emissions), as prescribed by NEPA. BOEM's MarketSim analysis is shown in Appendix R of the Final EIS. Table R-3 of that appendix shows total consumption-related GHG emissions of the Coastal Plain development, prior to discounting to account for market supply and demand effects.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
156.	Karen	Bollinger	—	94054	7	Climate and Meteorology	This document completely fails to assess how expanding oil and gas development in the Refuge will further exacerbate climate adaptation and mitigation challenges in an Arctic that is warming at twice the rate of the rest of the country.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
157.	Malcolm	Boothroyd	CPAWS Yukon Chapter	94061	28	Climate and Meteorology	A full life cycle analysis of greenhouse gas emissions projections corresponding to a range of scenarios for possible recoverable oil and gas reserves in the Arctic National Wildlife Refuge. (Including life cycle accounting of the potential upstream and downstream emissions associated with exploration, production and combustion of fossil fuel reserves). * Analysis of the implications from potential oil and gas activities in the Arctic Refuge on state, federal and global efforts to reduce greenhouse gas emissions.	As described on pages 3-7 and 3-8 of the Draft EIS, the BLM used BOEM's MarketSim model to perform a lifecycle analysis of GHG emissions.
158.	Lisa	Jodwalis	—	94072	10	Climate and Meteorology	Inadequate discussion of the synergistic effects of proposed oil and gas activities combined with climate warming in the 1002 Area where climate warming is already negatively affecting wildlife, specifically eiders and other sea ducks and seabirds, marine mammals such as polar bears and seals, and other marine life dependent on multi-year sea ice.	Discussions of climate change and cumulative effects have been expanded, including clarification that habitat changes already have been documented. Effects of climate change on polar bears and other marine mammals were discussed in Draft EIS Section 3.3.5, Marine Mammals, Affected Environment, Climate Change; additional text has been inserted to expand that discussion in the Final EIS, citing more references on the subject.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159.	Amy	Gulick	—	94077	7	Climate and Meteorology	7) The draft EIS fails to assess how expanding oil and gas development in the Arctic Refuge will exacerbate climate adaptation and mitigation challenges in an Arctic that is warming at a much faster rate than the rest of the United States.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
160.	David	Levine	—	94087	1	Climate and Meteorology	The Draft EIS does not adequately address the effects of global warming/climate change on the North Slope and the implications for arctic engineering and oil development practices. Some examples of these concerns include shorter winter seasons, less snow cover for winter seismic exploratory activities, increased stress/risk to wildlife, and less stable permafrost. The Department of the Interior needs to thoroughly research, understand and have a credible plan to address the impact of climate change on arctic conditions including permafrost, wildlife, snow fall and arctic engineering practices. Such information and analysis are currently lacking throughout the Draft EIS.	The full scope of analysis requested by the commenter is outside the scope of this EIS. The BLM addressed potential impacts from climate change on page 3-9 of the Draft EIS under Impacts of Climate Change on Potential Development. Future site-specific development proposals will be evaluated in site-specific NEPA analyses and through state permitting processes.
161.	—	—	Alaska Department of Natural Resources	94102	55	Climate and Meteorology	30 Chapter 3, Page 3-9 Justify analysis - inconsistencies Paragraph five on this page discussed the potential for sea level rise within the approximate 50-year life of the production facilities or access roads. This is confusing because the discussion of greenhouse gas emissions on page 3-7 is based on a 70-year period for the potential production. Please clarify which time period is being used for forecasting impacts.	The final EIS corrects the paragraph in question to say "70-year life of the production . . ."

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
162.	Kennon	Meyer	—	94105	9	Climate and Meteorology	The DEIS fails to make any significant analysis of how the utilization of the leases will contribute to climate change and then in turn analyze how those additions to climate change will impact the United States, including impacts beyond Alaska. Analyzing the impact of climate change on arctic drilling practices is only meaningful if it is paralleled by an analysis of how the drilling will itself increase the effects of climate change. The DEIS states, "Climate change can be driven by natural forces...or by human activity, such as land use changes or GHG emissions."32 As such, the impacts of human activity must also be taken into consideration.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
163.	Kennon	Meyer	—	94105	11	Climate and Meteorology	any EIS must carefully and thoroughly consider all aspects of climate change impacts. The DEIS does not meet the mark, offering only a myopic and ambiguous analysis (for all alternatives) of how climate change may "potentially" impact potential development in the Coastal Plain. The DEIS completely ignores how the activities resulting from oil and gas leasing would contribute to overall warming of the earth. As discussed below, the DEIS must consider how drilling and the associated human activities in the arctic region will increase GHG emissions and further fuel climate change.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
164.	Kennon	Meyer	—	94105	12	Climate and Meteorology	While such information is quantitatively valuable, the BLM's anemic attempt to examine the qualitative environmental consequences of increased GHG emissions (e.g., increased surface temperatures, expediated sea ice reductions), lays bare the inadequacies of the range of alternatives. Indeed, no attempt is made to distinguish between the alternatives in this regard, as the BLM simply provides a rote list of possible effects common to all alternatives, thus rendering impossible a meaningful comparative analysis. ⁴⁸	The Draft EIS presents the range of estimated GHG emissions for all alternatives in a global context, so the reader can gauge the portion of the cumulative global GHG emissions that would be due to the proposed action.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
165.	Kenyon	Meyer	—	94105	13	Climate and Meteorology	studies show that the impacts of climate change are disproportionately felt in the arctic northern latitudes. Specifically, Alaska is undergoing rapid changes. 51 Substantial atmospheric warming has occurred at more northern latitudes over the last half-century.52 "Fire patterns are changing, permafrost is thawing, and Arctic summers are now warmer than at any other time in the last 400 years. Most climate models predict that high latitudes will experience a much larger rise in temperature than the rest of the globe over the coming century."53 Arctic surface and atmospheric temperatures have demonstrated substantial increases. 54 "Multiple observation sources, including land-based surface stations since at least 1950 and available meteorological reanalysis datasets, provide evidence that arctic near-surface air temperatures have increased more than twice as fast as the global average."55 According to the observed records, the arctic region shows a remarkable recent rapid temperature trend in comparison with other regions.56 The BLM has recognized arctic warming in northern Alaska through the National Petroleum Reserve-Alaska ("NPR-A") Climate Change analysis calculated on behalf of the agency. Both summer and winter temperatures are expected to increase across the NPR-A throughout the century, with the greatest increases in winter. 57 Summer temperatures are projected to rise across the NPR-A by approximately 3°F by the 2040s, and by approximately 5-6°F by the 2090s.58 However, the DEIS fails to fully analyze increased temperatures in the arctic by considering them in any of the alternatives.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
166.	Kenyon	Meyer	—	94105	14	Climate and Meteorology	the increased temperatures throughout the Arctic are expedited by the GHG emissions released during the thawing of permafrost. The DEIS identifies that both climate change and potential impacts of the oil and gas lease drilling in the area could lead to a thawing of permafrost. ⁶⁵ Indeed, throughout Alaska, there is evidence that warming is causing a reduction in permafrost. "Rising Alaskan permafrost temperatures are causing permafrost to thaw and become more discontinuous." ⁶⁶ This thawing process then in turn releases additional carbon dioxide and methane, resulting in an amplifying feedback and additional warming. ⁶⁷ As such, this creates another way by which the oil and gas leases will result in the release of additional GHG emissions into the environment. ⁶⁸ The DEIS fails entirely to address this foreseeable death spiral.	Decreases in permafrost extent and increasing active layer depth in Alaska have happened during many warmer times in Arctic geologic history, including earlier during the current interglacial period, when the Arctic Ocean has been ice free or nearly so in summers (Park et al 2018). Such changes have never led to a "death spiral" of warming due to associated methane emissions.
167.	Mark	Jorgenson	—	94411	5	Climate and Meteorology	A more complete and graphic presentation of existing data are needed. The climate data trends for Kaktovik should be presented graphically to better support interpretation of trends. Data from the USGS weather stations at Niguanak, Marsh Creek, and Camden Bay (Urban and Clow 2018) should be summarized and used to assess climate variability from the coast to the mountains. It is insufficient to simply reference the 2018 USGS report; the data need to be analyzed and used in a meaningful way to assess the implications of the analyses for the evaluation of Alternatives.	Accurate long-term temperature and precipitation trend charts for Kaktovik/Barter Island are not feasible, given there are missing data over the period of record going back to 1948, including in the past couple of decades. However, the trend data referenced and discussed, which are included on the UAF climate website for Barrow and Interior Alaska locations, provide a good description of climate trends for the North Slope region.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
168.	Mark	Jorgenson	—	94411	6	Climate and Meteorology	Precipitation data from the NRCS Wyoming snow gauge at Kaktovik should be analyzed. In addition, it would be useful to include to longer-term trends at Barrow where the climate data record extends to 1900. Below is a chart of mean annual air temperatures for Barrow, with smoothing to highlight trends (Figure 1). Finally, the discussion that attributes most of the recent warming to the 1977 PDO shift is misleading.	Accurate long-term temperature and precipitation trend charts for Kaktovik/Barter Island are not feasible, given there are missing data over the period of record going back to 1948, including in the past couple of decades. However, the trend data referenced and discussed, which are included on the UAF climate website for Barrow and Interior Alaska locations, provide a good description of climate trends for the North Slope region.
169.	Mark	Jorgenson	—	94411	7	Climate and Meteorology	Additional weather stations should be installed and monitored for at least 5 years as part of the EIS process. There is likely a strong inland temperature gradient from the coast to the mountains. This needs to be documented because it can affect engineering design, permafrost temperatures, ground stability, winter travel requirements, and ecological patterns and processes. Data on temperature gradients are needed to adequately assess Alternatives that vary substantially in their climatic regimes.	Existing development on the North Slope has already had to cope with temperature gradients at various times of year between the coast and the mountains. No additional measurements are expected to be needed for engineering purposes at this time; however, the EIS does not preclude the development of additional weather stations if needed in support of engineering or other purposes.
170.	Mark	Jorgenson	—	94411	9	Climate and Meteorology	Future climate projections need to be included and sufficiently discussed, such as those from the SNAP downscaled climate projections (https://www.snap.uaf.edu/). The projected climate warming in northern Alaska is projected to be large due to arctic amplification, and will likely have serious coastal, permafrost, and ecological impacts (Reidmiller et al. 2018). The projected warming also has huge implications for engineering design, facility stability, ice road seasons, and road maintenance. These need to be properly evaluated. As ice roads are an essential part of the infrastructure design, the effect of a warming climate is critical.	Each developer would need to address climate-dependent facility design and maintenance issues closer to the time of development, using the latest available data at that time. It is not expected that design issues and the current rate of warming would preclude development of the resource.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
171.	Mark	Jorgenson	—	94411	10	Climate and Meteorology	The information on sea ice is inadequate and misleading. Graphs should be presented for past trends and future projections. The section is misleading by highlighting a decrease in sea ice extent for July between 2005 and 2018. To dispel this misleading approach to minimizing the impacts of rapid sea ice loss, the DEIS must present the entire graphic record of sea ice changes in seasonal minimum extent since the satellite record began, as well as review recent studies on projected sea ice loss. The implications of the loss of summer sea ice are huge for nearshore wave climate, coastal erosion, inland temperatures, and effects on numerous species, particularly marine mammals. This attempt to minimize impacts through selective cherry picking of data is unconscionable.	The text referenced (presented on page 3-9 of the Draft EIS) was presented in respect to the potential impact of climate changes on potential development, including changes in sea ice. The changes in sea ice cover and the implication of these changes on species, including marine mammals, are discussed further in those respective sections of the Draft and Final EISs.
172.	Withheld	Withheld	—	94435	8	Climate and Meteorology	The DEIS failed to address climate impacts. The DEIS fails to provide any analysis of how expanding fossil fuel development in the Arctic Refuge would exacerbate the impacts of climate change already occurring across the Arctic. The DEIA fails to address how to minimize the impacts on climate. Developing oil and gas in the Arctic Refuge is inconsistent with the urgent need to address climate change.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.
173.	Withheld	Withheld	—	94593	2	Climate and Meteorology	No information or assessment on impacts of climate change on coastal plain ecosystems relative to new impacts. Information about snow depth, permafrost, etc. is dated and does not project changes in these factors.	Data on permafrost trends was presented in Section 3.2.8 (Soil Resources) of the Draft EIS. As stated in Section 3.2.1 of the Draft EIS, there is no discernable trend in annual precipitation for the North Slope climate division from 1925 through 2016. Thus, snow depth is not likely to be showing significant trends, apart from later initiation and earlier melt due to a lengthened warm season.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
174.	Jason	Schwartz	Institute for Policy Integrity	94627	13	Climate and Meteorology	BLM reports that, according to its analysis, reducing the supply of oil and gas under the no action alternative by up to 10 billion barrels of oil and 2.4 TCF of natural gas will only reduce total demand for oil and gas by 3.9%. ⁶⁴ Instead, BLM predicts that over 80% of the forgone oil and gas from Coastal Plain will be offset by increased foreign imports of oil and gas. ⁶⁵ First, we have been unable to reproduce these results using the copies of MarketSim 2016 and documentation of MarketSim 2017 that are available to us. The challenges of reproducing and critiquing BLM's analysis are compounded by the fact that BLM has not made available as part of its public docket on ePlanning the complete runs of its energy substitution analysis. Indeed, we only obtained the summary document, labeled "BOEM 2018a" in the DEIS, by specific e-mail request. BLM must make the full energy substitution analysis available to the public to fulfill the requirement for meaningful public review under NEPA.	The 3.9 percent quoted in the comment is the percentage of the Coastal Plain project that would not be replaced by substitute energy sources. BOEM released the MarketSim to IPI through a FOIA request based on BOEM's use of it in different contexts. FOIA doesn't require BOEM to ensure that those who request the model be able to replicate results; there may be reasons why the results are not equivalent; however, the BLM agrees that more detail regarding the MarketSim analysis should be provided and has included these details in Appendix R of the Final EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
175.	Jason	Schwartz	Institute for Policy Integrity	94627	15	Climate and Meteorology	the Department of the Interior never explains why it could not make a reasonable assumption about average emissions from total foreign consumption of oil. The MarketSim documents claim that "oil is consumed in a variety of products, which have a wide range of emissions factors," ⁷⁴ and yet the emissions factors for oil that BLM has used elsewhere show a rather manageable range of between a low of 5.72 kilograms of carbon dioxide per gallon to a high end of 14.64 kilograms per gallon. ⁷⁵ BLM could easily apply either EIA tables of U.S. exports by petroleum product, ⁷⁶ or could simply give a lower-bound estimate of the net emissions effect. ⁷⁷ Either option would be much more accurate and reasonable than a complete omission.	The range of CO2 emitted per unit of oil is well established and not the issue at hand; rather, the issue is the uncertainty and lack of reliable data for the oil substitutes available in other countries and those countries' substitution patterns (cross-price elasticities) and resulting energy mix of oil and the various substitutes. The DC Circuit has held that agencies are not required to model how their actions will affect global energy markets and how those market changes will, in turn, affect foreign greenhouse gas emissions (Sierra Club, 867 F.3d at 202). That kind of analysis is simply "too speculative" and infeasible to be required under NEPA.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
176.	Jason	Schwartz	Institute for Policy Integrity	94627	17	Climate and Meteorology	While the DEIS does calculate some direct emissions from the upstream "construction, drilling, production, processing, and transportation" of oil and gas from Coastal Plain,⁸⁹ the substitution analysis apparently does not calculate comparable upstream emissions from substitute energy sources. For the sake of completeness and accuracy, that omission should be rectified in any final analysis. However, in correcting that omission, BLM must be sure to address two other issues at the same time. First, the DEIS also currently omits any quantification or monetization of the climate damages from methane leaks. The DEIS admits this omission with respect to methane leaks "during the drilling, production, processing and transport of natural gas,"⁹⁰ though there could also be significant methane leaks during the drilling, production, processing, and transport of oil which are also not currently accounted for in the DEIS. The DEIS speculates that methane leaks from gas production could be "roughly 5 percent of the estimate indirect emissions from combustion"-which would be a significant increase. Yet the DEIS never actually quantifies, let alone monetizes, the methane leaks from gas, and says nothing of methane leaks from oil production. These errors should be rectified in combination with any broader refinements to the calculation of upstream and direct emissions.	If substitute energy sources have significant upstream emissions, that would make the BLM's analysis in the Draft EIS slightly conservative. This is because it would slightly overestimate the emissions increment between the no action and a proposed action alternative. Regarding the estimation of methane emissions, BOEM's modeling tool used for "indirect" lifecycle GHG emissions includes CO2 emissions, nitrous oxide emissions, and methane emissions; therefore, the data presented in the Draft EIS already include methane emissions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
177.	Jason	Schwartz	Institute for Policy Integrity	94627	18	Climate and Meteorology	there obvious problems with the assumption that 80% of forgone production will be offset by increased foreign imports. For one, MarketSim assumes that "other oil producing countries will supply" this offsetting production "without additional restraints," which BLM admits is a "highly uncertain" assumption about the effects on foreign production of this U.S. leasing decision.⁹² MarketSim does not, for example, consider whether OPEC countries will behave competitively or not, nor does it consider possible global regulatory changes in response to climate change. It is also unclear how to square this 80% import estimate with EIA projections that the United States will be a net exporter-projections that EIA made both before and after the moratorium on drilling in ANWR was lifted, thus suggesting that the status of the United States as a net exporter does not depend on the production from ANWR.⁹³ BLM's use of MarketSim also assumed that a decrease in onshore Alaskan production could not be offset by an increase in new offshore U.S. production, which is an unrealistic assumption and may have arbitrarily increased the portion of substitutes assigned to foreign imports. BLM should model all significant direct, indirect, upstream, and downstream emissions from the proposed leasing action and from substitution energy sources under the no action alternative, but should not selectively pick and choose which categories of emissions to model or not. If BLM does not address these issues, a selective calculation of the non-downstream emissions from a substitution analysis could skew the comparison of the no action alternative versus the leasing proposals.	This relates to the issue of uncertainty and the lack of reliable data for the oil substitutes available in other countries and those countries' substitution patterns (cross-price elasticities) and resulting energy mix of oil and the various substitutes. The DC Circuit has held that agencies are not required to model how their actions will affect global energy markets and how those market changes will, in turn, affect foreign greenhouse gas emissions (Sierra Club, 867 F.3d at 202). That kind of analysis is simply "too speculative" and infeasible to be required under NEPA. Furthermore, the greenhouse gas analysis used for the BLM project only considers the emissions from refining and consumption. A barrel of oil produced domestically from the onshore or offshore or a barrel of oil produced through imports and transported to the U.S. has the same amount of emissions when consumed. Therefore, the substitution of imports versus additional onshore production versus additional offshore production is irrelevant. The substitutions used in the lifecycle model are only from consumption of the fuel, and the only relevant substitution information is the proportion of oil, natural gas, coal, electricity, and reduced demand.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
178.	Jason	Schwartz	Institute for Policy Integrity	94627	19	Climate and Meteorology	Many of the "key assumptions"95 that BOEM makes in modeling lifecycle greenhouse gas emissions based on its MarketSim results are obviously problematic or could be straightforwardly refined with further study: * Number 1 assumes near constant demand for oil and gas for up to 70 years into the future, based on EIA's reference case. However, not only has the EIA recently projected "decreasing domestic demand" for petroleum products through 2034,96 but EIA's reference case estimates are intended to reflect trends and are not necessarily firm predictions about the future. As such, these trends should not be used in isolation as point estimates; instead, agencies should conduct sensitivity analysis over reasonable assumptions and scenarios. * Number 2 assumes engines used to produce and consume oil and gas will not become more efficient, and oil and gas will remain primary energy sources. The first half of the assumption ignores standard best practices for cost-benefit analysis that instruct agencies to make reasonable assumptions about technological growth.97 The second half of that assumption again ignores recent EIA outlooks for declining demand for oil. * Numbers 5, 7, and 9 assume that production gains are equal across all petroleum products; that offshore oil will be refined into petroleum products in the same proportions as nationally; and that the percent of oil that remains uncombusted will remain the same. These are empirical questions that can be studied and answered for Alaskan onshore production. * Numbers 6 and 10 relate to foreign versus domestic consumption, and the problems with these assumption have been addressed above.	MarketSim requires a substantial amount of baseline data; without that information, sensitivity tests would be unable to model. Because of the long time horizon, additional assumptions could lead to wild inaccuracies and underestimating emissions. BOEM's approach was to take a worst-case scenario and consider the maximum emissions and not account for future improvements for which future emission rates are unknown.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
179.	Matthew	DePaolis	—	95032	3	Climate and Meteorology	Additionally, many of the requisite evaluations in the DEIS have been excluded or glossed over. Climate change effects are mentioned in a cursory matter in section 3-6 of the DEIS, but no real ramifications or effects are explored	The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project. The Final EIS cumulative effects sections have been updated to include more information on the synergistic effects of Coastal Plain development and climate change.
180.	Matthew	DePaolis	—	95032	4	Climate and Meteorology	Furthermore, the document referenced, GMT2 FEIS, also does not explore the actual indirect effects or costs of climate change on the United States or the world. Pg. 108 of GMT2 references positive feedback loops and how they may be affected but does not explain in any detail what effect they will have on the environment, nor their exacerbating effect on global climate change. Pg. 109 of GMT2 references potential “changes to fish and wildlife habitat” but does not explore these changes in any specific detail. These negative effects of the drilling leases must be explored in detail to satisfy the requirements set forth in NEPA.	The BLM determined that evaluating the cost of carbon emissions is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS. The Final EIS cumulative effects sections have been updated to include more information on the synergistic effects of Coastal Plain development and climate change.
181.	Tim	Whitehouse	PEER	95601	75	Climate and Meteorology	What do we need to know and why regarding subjects? Development decisions that will be affected by snow/climate information include; seismic exploration*, water availability, and ice road construction*. To better inform decisions on these issues we will need to understand: 1. Snow Depth/Density/Distribution/Snow Water Equivalent to minimize the impacts on vegetation from tundra travel. (short-term) 2. Active Layer cycles/depths and their dependence on soil types to better plan routes of tundra travel. (short-term) 3. Late Season/ Fall Hydrologic Regimes and end of season snowpack to inform water availability for ice roads. (intermediate/long-term)	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
182.	Tim	Whitehouse	PEER	95601	77	Climate and Meteorology	What are key information gaps? 1. Snow Cover and Composition across both local and regional gradients of coastal plain a. Basic Climatology (i.e., precipitation, wind, temperature) b. Remote-sensing information to capture snow depth (e.g., Structure from motion, LiDAR, high-resolution satellite imagery) c. Snow density (e.g., what condition does the snow need to be in to minimize impacts of tundra travel) d. Snow water equivalent e. How snow cover, depth, and wind operate in concert to produce conditions amenable to tundra travel. 2. Active Layer Information a. How long does the subsurface need to be frozen and at what temperature/depth? Currently DNR uses a rough standard where ground temps need to be approximately -5° at 30 cm depth. Typically BLM follows this standard. b. How do active layer dynamics change based on soil type? 3. End of season snowpack and changing hydrologic regimes in late season (Fall). a. How do current climate trends impact alluvial water availability for winter activity in 1002? b. How does end of season snowpack contribute to lake recharge potential and water deficit? c. How does groundwater connectivity contribute to lake recharge potential?	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
183.	Tim	Whitehouse	PEER	95601	78	Climate and Meteorology	What studies/surveys need to be conducted to fill those information gaps? 1. A 2016 review of methods to quantify common snow parameters can be found here. A combination of in-situ measurements (e.g., SNOTEL site, weather stations spanning N-S gradient), ground surveys, and remote sensing information will need to be collected. Currently LiDAR and structure from motion (SFM) are promising technologies that could be expanded this winter (FY 18) with limited operations currently scheduled	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
183. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	for April. In addition, SFM sensors could be mounted to FLIR aircraft for ~ \$10,000 plus processing. Operating a SNOTEL site costs approximately \$3,000/yr and approximately \$24,000 - \$30,000 for installation. Some of the installation may be offset by NRCS. Long-term access costs will need to be addressed in advance of siting. 2. Active layer can be monitored via weather stations but will also need to be measured with ground surveys. Soil surveys will need to be produced at a finer spatial resolution than is currently available in order to capture some of the variability in the 1002. 3. Compared to Prudhoe Bay, Kuparuk, and the NPR-A, the 1002 area lacks surface water storage in lakes which provide the main water source for ice roads. Much of the water to support winter activity in the 1002 may need to come from isolated lakes, alluvial aquifers, and/or floodplain gravel pits. End of season snowpack surveys and watershed delineation will be important to understand lake recharge potential and water deficiency. Hydrologic monitoring will need to be implemented in selected river basins (e.g., Canning). In the longer term, there is potential to develop late season monitoring technology and methods in more accessible watersheds where stations are already in place and where there is a long-term record (e.g., Kaparuk) and this could be emphasized in 2018 field efforts.	(see above)

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
184.	Harry K.	Brower Jr.	North Slope Borough	95612	55	Climate and Meteorology	The DEIS refers to climate as “the most recent 30-year averages of meteorological parameters” (DEIS at 3-2), and as the “longer-term (30 years or more) variations in meteorological conditions” (Id. at 3-5). These statements should be clarified and further explained as they could be interpreted to suggest that BLM's analysis may not have adequately captured or examined the climate-related effects at the relevant scale for purposes of assessing effects on the Coastal Plain.	The cited statements are the practical definition of climate as used by meteorologists. This concept encompasses both the average weather data over a 30-year period, and the variability of the data (e.g., extremes) within a 30-year period.
185.	Harry K.	Brower Jr.	North Slope Borough	95612	56	Climate and Meteorology	3.2.1 3-9 “GHG emissions disperse through the global atmosphere relatively quickly relative to the time scales of concern for climate . The potential cumulative climate impacts of global development and associated GHG emissions have been discussed extensively in the published literature, . and therefore are not repeated here (BLM 2018a· IPCC 2014; Melillo et al. 2014; ACIA 2005).” These sentences constitute a simplistic assessment of cumulative effects. Rather than simply citing literature the Final EIS should provide an analysis on reasonable foreseeable activities that will contribute to cumulative impacts of GHG emissions.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
186.	Withheld	Withheld	—	96175	2	Climate and Meteorology	The EIS must address the proposed project and related impacts under the subject of climate change, not locally but world-wide. 3.2 PHYSICAL ENVIRONMENT 3.2.1 Climate and Meteorology Affected Environment Climate is described by the National Weather Service (NWS) as the most recent 30-year averages of meteorological parameters, such as temperature, precipitation, humidity, and winds; thus, climate change is treated here as the longer-term change in such variables. Climate change can be driven by natural forces, such as volcanic activity, solar output variability, and the earth's orbital variations, or by human activity, such as land use changes or GHG emissions. Much attention in recent decades has focused on the potential climate change effects of GHGs, especially carbon dioxide (CO2), which has been increasing in concentration in the global atmosphere since the end of the last ice age.	The Draft EIS analysis accounts for the estimated incremental amount of oil and gas burned on a global scale, and the resulting estimates of GHG emissions. Because the increase is small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
187.	Withheld	Withheld	—	96183	1	Climate and Meteorology	The DEIS estimates 56,739 to 378,261 metric tons of annual direct greenhouse gas (GHG) emissions and 0.7 to 5 million metric tons of annual indirect GHG emissions. To put that in perspective, five million metric tons of GHG emissions would equate to one million annual emissions from new vehicles. There is no doubt that this amount of emissions will drive further climate change. The people of the Arctic see these climatic changes too. Temperatures in the Arctic are rising at twice the rate of the rest of the nation. Villages are eroding into the sea, permafrost melt is damaging infrastructure, and food sources are disappearing. Drilling for fossil fuels will only compound these existing devastating impacts. I do not believe we should drill the Arctic Refuge for fossil fuels that will only lead to increased GHG emissions responsible for these very climatic changes. Oil and gas development activities should not be allowed on the Coastal Plain. I urge the Bureau of Land Management to consider the No Action Alternative as well as the impacts of climate change and the associated costs of climate damages.	Comment noted.
188.	Kevin	Kane	Sierra Club, Western Watersheds	96216	1	Climate and Meteorology	Where is the climate change analysis? What will be the results of leasing land that will produce oil and gas that will be burned for energy? How does this leasing lead to further warming and it's effects? Climate scientists have said 80% of known oil reserves need to stay in the ground to prevent exceeding 1.5 deg C. How will these leases impact the climate? The leases and climate change are inextricably linked	As projected in the Draft EIS, the oil and gas produced from the Coastal Plain would largely just offset other global production, with only a small portion (< 4 percent) of the total production representing a global increase in GHG emissions. Because the increase in GHG emissions is extremely small in a global context, the proposed action, by itself, would not measurably affect climate change adaptation or mitigation challenges in the Arctic or globally.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
189.	Withheld	Withheld	—	96867	7	Climate and Meteorology	3-9 Given the fast rate at which perma-frost is thawing in Alaska, it is irresponsible to suggest that “Permafrost is not likely to disappear in the program area during the life of any oil and gas development in the program area” ... there is no precedent for this	Projections for the maximum active layer depth show it increasing from 2 feet in the 1990–2000 period to about 3 feet in the 2090–2100 period (Arctic Climate Impact Assessment, Chapter 16, November 2004). This rate of change would not be expected to eliminate permafrost in North Slope areas within the current century.
190.	Withheld	Withheld	—	96867	8	Climate and Meteorology	3-9 “At current rates of sea level rise, from around 7 inches per century (tide gauge record) to 12 inches per century (satellite measurements), sea waters are not expected to encroach on any potential development within an approximate 50-year life of production facilities or access roads for the program area.” Apparently the authors of this report are very optimistic and have missed recent studies and reports on sea level rise. I suggest much more study is needed to support this statement.	The sea level rise figures are established in the scientific literature (e.g., Church and White 2011). This literature also shows little change in the rate of sea level rise over the past century.
191.	Brook	Brisson	Trustees for Alaska	96981	51	Climate and Meteorology	The draft EIS concedes that oil and gas extraction from the Coastal Plain has a magnitude that would result in increased net demand, resulting in a net increase in greenhouse gas (GHG) emissions relative to the no leasing alternative.159 However, as described in Part V.A. of these comments, the draft EIS fails to provide any analysis of how that increase in emissions, and the timing of those emissions, considered either individually or cumulatively, would affect the severity or timing of climate change impacts on any scale.	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public. The potential cumulative effects of climate change due to greenhouse gas emissions are addressed extensively in referenced documents; the BLM does not need to repeat these voluminous discussions in the Draft EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	Deanna	Noel	Defenders Of Wildlife	97156	3	Climate and Meteorology	count for impacts 38of carbon emissions. Although the DIS -- the DEISestimates the carbon emissions resulting from theproduction and consumption of oil and gas resourcesdeveloped on the coastal plain, and fails to fullyassess the importance of these emissions on globalclimate change, which already is dramaticallyaffecting Arctic ecosystems.	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public. The potential cumulative effects of climate change due to greenhouse gas emissions are addressed extensively in referenced documents; the BLM does not need to repeat these voluminous discussions in the Draft EIS.
193.	Marueen	Longworth	—	97918	1	Climate and Meteorology	Large amounts of black carbon from combustion will be added to the atmosphere during the ANWR development phase. The DEIS does not mention this	Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
194.	—	—	—	97937	3	Climate and Meteorology	complete a thorough carbon! C02 analysis and global warming impact ofnot just development activities from leases, but also for the millions of gallons of oil anticipated to be brought to market from the proposed leases.	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public. The potential cumulative effects of climate change due to greenhouse gas emissions are addressed extensively in referenced documents; the BLM does not need to repeat these voluminous discussions in the Draft EIS.
195.	—	—	United States Fish and Wildlife Service	97942	207	Climate and Meteorology	Section 3.2.1, Page 3-5, first two lines: The DEIS states, "For example, a significant fraction of CO2 emitted by human sources each year is taken up by the biosphere, which is gaining mass in response to the emissions." Please remove this line as a significant fraction of human-sourced CO2 is also not sequestered by the biosphere, resulting in increasing CO2 atmospheric concentrations and increasingly obvious patterns of climate change effects, particularly in the Arctic.	The cited statement is accurate and will be retained. According to data provided by the US Carbon Cycle Science Program (USCCSP 2019), a collaboration of over a dozen federal agencies, the biosphere absorbs approximately 55 percent of the CO2 emitted each year from industrial activity and burning of biomass.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
196.	Brook	Brisson	Trustees for Alaska	98269	81	Climate and Meteorology	The release of vented and flared gas from oil and gas operations contributes to greenhouse gas emissions, with vented gas contributing as methane and flared gas causing localized impacts from particulates deposited on snow and ice as black carbon. The Alaska Oil and Gas Conservation Commission collects data on vented and flared gas releases greater than one hour. BLM should analyze these data - similar to how BLM analyzed spill data for the North Slope - and quantify the rate and total projected quantity of these releases. Additionally, BLM should reduce the releases of vented and flared gas to the maximum extent through stringent requirements to reduce venting and flaring.	Flaring and vented emissions are already minimized to the extent practical by North Slope oil and gas producers, considering the needs for safe operations. The direct GHG emissions from these operations are already accounted for in the analysis presented in the Draft EIS. Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.
197.	Brook	Brisson	Trustees for Alaska	98269	99	Climate and Meteorology	It is well established that when an agency considers a decision that will result in greenhouse gas emissions, NEPA requires the agency to analyze and disclose the effects of these emissions, including emissions from fossil fuels that will be burned because they will be produced or delivered to market as a result of the agency's decision. ⁵²⁸ ... Although a cost-benefit analysis is not necessarily the ideal or exclusive method for assessing contributions to an adverse effect as enormous and potentially catastrophic as climate change, a tool to determine the costs of carbon pollution has been developed by the	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
197. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Interagency Working Group on Social Cost of Greenhouse Gases.⁵³² The Interagency Working Group has produced estimates for the social cost of carbon in order to “allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions.”⁵³³ ... However, studies have demonstrated that the numeric value assigned to the social cost of carbon vastly underestimates the true cost.⁵³⁷ The social cost of carbon is therefore a minimum value. ... All of these sources point to BLM's duty under NEPA to perform a thorough and accurate accounting of Refuge leasing's greenhouse gas emissions and their environmental effects. The DEIS does not fulfill BLM's obligations, as explained below. ... [528 See, e.g., <i>Sierra Club v. Fed. Energy Regulatory Comm'n</i>, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (explaining that agency must “either quantify and consider the project's downstream carbon emissions” or provide a detailed explanation of “why it cannot do so” (emphasis added)); <i>Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.</i>, 538 F.3d 1172, 1217 (9th Cir. 2008) (requiring NHTSA to consider effect of greenhouse gas emissions under automotive fuel efficiency rule); <i>Mid States Coal. for Progress v. Surface Transp. Bd.</i>, 345 F.3d 520, 549-50 (8th Cir. 2003) (requiring agency to disclose effects of burning coal transported on proposed rail line); <i>Montana Env't'l Info. Ctr. v. U.S. Office of Surface Mining</i>, 274 F. Supp.3d 1074 (D. Mont. 2017) (requiring agency to assess effects of greenhouse gas emissions from mine expansion).]	(see above)

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
198.	Brook	Brisson	Trustees for Alaska	98269	100	Climate and Meteorology	BLM's analysis of greenhouse gas emissions relies on a misuse of the MarketSim model that drastically underestimates the greenhouse gas (GHG) pollution that will result from oil and gas leasing in the Arctic Refuge. One of the flaws in BLM's use of the model is its assumption that Arctic Refuge drilling will only affect the U.S. market for oil, rather than the global market. ... Unfortunately, BLM has deprived the public of the opportunity to meaningfully comment on the GHG analysis by hiding the calculations that led to these numbers in a white paper that is not part of the draft EIS and is not publicly available. ⁵⁴¹ What BLM does make clear, however, is that the calculations are based on changes in U.S. demand for oil, despite the fact that "petroleum is obviously a global commodity." ⁵⁴² The choice to exclude foreign markets greatly skews the results of the analysis to make the GHG consequences of Arctic Refuge drilling appear much less significant than they are. BLM claims that the MarketSim model on which it relies only models changes in US demand: "[t]he MarketSim model considers only the US supply and demand for petroleum; thus, the accuracy of the change (increase) in petroleum demand estimated from MarketSim projections is limited, given its scope is just the US market." ⁵⁴³ This is not true. "MarketSim models oil as a global market with supply and demand specified separately for the U.S. and the rest of the world." ⁵⁴⁴ BOEM in fact used MarketSim's global market capabilities when it calculated the GHG pollution from the 2017-2022 Five Year Plan for offshore oil and gas in 2016. ⁵⁴⁵	Regarding global oil and energy demand, the BLM lacks reliable data for the oil substitutes available in other countries and those countries' substitution patterns (cross-price elasticities) and resulting energy mix of oil and the various substitutes. The DC Circuit has held that agencies are not required to model how their actions will affect global energy markets and how those market changes will, in turn, affect foreign greenhouse gas emissions (Sierra Club, 867 F.3d at 202). That kind of analysis is simply "too speculative" and infeasible to be required under NEPA. Regarding documentation of the MarketSim analysis, the BLM agrees that the Draft EIS was short on details in this regard; the BLM has provided supplemental information in the Final EIS main text and Appendix R to rectify that shortfall.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
199.	Brook	Brisson	Trustees for Alaska	98269	101	Climate and Meteorology	As noted above, the Interagency Working Group on Social Cost of Greenhouse Gases has developed a tool to determine the costs of GHG pollution. ⁵⁴⁹ BLM's decision not to apply this tool or another tool to assess the costs of Arctic Refuge GHG pollution ⁵⁵⁰ artificially skews BLM's analysis to make Refuge drilling look less harmful.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.
200.	Brook	Brisson	Trustees for Alaska	98269	102	Climate and Meteorology	A complete and accurate assessment of the costs of Arctic Refuge drilling's impacts on the climate is even more essential to a reasoned decision because BLM takes into account the potential economic benefits of the project. For example, it states that total taxes and royalties from Arctic Refuge drilling would amount to approximately \$104.6 million. ⁵⁵¹ It is arbitrary for the agency to quantify certain economic benefits of Arctic Refuge drilling (and allude to others) without accurately disclosing the social cost of its likely carbon emissions. ⁵⁵²	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
201.	Brook	Brisson	Trustees for Alaska	98269	103	Climate and Meteorology	BLM's justification for its failure to utilize the social cost of carbon (or otherwise quantify the cost of carbon emissions) is arbitrary and capricious. In Appendix F, the agency claims that a) current protocols do not require applying the social cost of carbon metric to the DEIS; b) NEPA does not require cost-benefit analysis; c) that the DEIS does, in fact, analyze non-monetary impacts from carbon emissions; d) that this approach is justified because it is easier to understand; and e) that, regardless, the social cost of carbon is flawed. ⁵⁵³ As an initial matter, BLM cannot hide behind the fact that current protocols do not require a particular social cost of carbon metric or that prior guidance on the Interagency Working Group's social cost of carbon metric has been retracted. That metric remains a readily available means of analyzing a potentially significant impact. (Indeed, it is worth noting that BLM used estimates of the social cost of carbon in NEPA reviews prior to release of the Interagency Working Group's protocol in 2010. ⁵⁵⁴) Additionally, BLM cannot justify its omission of social cost by simply claiming that they chose a different methodology. The DEIS provides no meaningful quantitative analysis of the social cost of GHG pollution, despite quantifying the economic benefits of the program leading to such pollution.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
202.	Brook	Brisson	Trustees for Alaska	98269	104	Climate and Meteorology	BLM further attempts to dismiss its failure to analyze costs by claiming that "[a]ny increased economic activity that is expected to occur with the proposed action is simply an economic impact, rather than an economic benefit" and that "[s]ome people may perceive increased economic activity as a 'positive' impact . . . whereas another person may view increased economic activity as negative or undesirable." ⁵⁵⁵ This rhetorical sleight of hand does not dispel the fact that BLM has failed to quantify the economic impacts of carbon emissions as part of its accounting for the economic impacts of the Coastal Plain oil and gas leasing program. BLM is choosing to quantify the benefits of the leasing program but failing to accurately quantify the costs from carbon emissions. ⁵⁵⁶ In other words, the agency has functionally-and impermissibly- chosen to set the costs of those emissions at zero. ⁵⁵⁷ [556 See High Country Conservation Advocates, 52 F. Supages 3d at 1190-93.] [557 Id.; see also Ctr. For Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1200 (9th Cir. 2008).]	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.
203.	Brook	Brisson	Trustees for Alaska	98269	105	Climate and Meteorology	BLM asserts that the No Action Alternative would result in only 3.4 to 3.9 percent less demand for oil, and therefore GHG pollution, than the action alternatives. ⁵⁶⁰ The assumption is that the other 96 percent of forgone Arctic Refuge oil would be replaced by other production that would only happen if Arctic Refuge production does not happen. ⁵⁶¹ However, by excluding one of the largest factors in its analysis (non-domestic oil consumption), BLM presents a misleading view of the impacts of its action. Artificially limiting its analysis and not fully reporting the findings of	MarketSim simulates end-use domestic consumption of oil, natural gas, coal, and electricity in four sectors (residential, commercial, industrial, and transportation); primary energy production; and the transformation of primary energy into electricity. MarketSim mostly represents U.S. energy markets, but it also captures interactions with world energy markets as appropriate. BOEM recognizes the uncertainty in its projections and the further uncertainty in attempting to model the entire set of energy market substitutions that would occur globally. BOEM also does not

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
203. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the model it relies on allows BLM to irrationally conclude that increased oil production from the Arctic Refuge would lead to only a negligible increase in emissions over the No Action Alternative.	have sufficient data to support estimates of the GHG emissions likely to result from changes in foreign oil consumption. In regards to inputs, assumptions, and functions for the MarketSim and GHG models, this information is contained in BOEM's documentation for these models: https://www.boem.gov/ESPIS/5/5612.pdf https://www.boem.gov/OCS-Report-BOEM-2016-065/ . For the MarketSim model, the Final EIS has been revised to say that MarketSim estimated the percentage of proposed action-related GHG emissions that would be incremental in the U.S. energy (not just oil) market. Thus, the 3.9 percent in the high-end case and the 3.4 percent in the low-end case are not the increase in oil demand; they are the increase in domestic energy demand, as a percentage of the total energy in petroleum that would be produced in the Coastal leasing area. In regards to how the BLM accounted for factors such as the effects of climate policies on oil demand, BOEM's MarketSim model uses the EIA Annual Energy Outlook baseline data in the model. EIA's forecast looks at existing policies and does not forecast future laws or policies. BOEM uses the EIA projections as the official government estimates of future energy consumption. Any potential climate policy would be too uncertain at this stage to fully estimate into the model. There are currently no reliable methodologies for forecasting foreign energy cross-price elasticities and oil/gas price shock substitution responses to arrive at a global GHG emissions impact from associated domestic changes. Also, the DC Circuit has

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203. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	held that agencies are not required to model how their actions will affect global energy markets and how those market changes will, in turn, affect foreign greenhouse gas emissions. Sierra Club, 867 F.3d at 202. That kind of analysis is “too speculative” and infeasible to be required under NEPA. In sum, the EIS has been updated to include the gross combustion emissions, to add full results tables, to reference the Lifecycle paper and MarketSim documentation, and to provide information as to why alternative future carbon policies and foreign consumption aren’t modeled.
204.	Brook	Brisson	Trustees for Alaska	98269	106	Climate and Meteorology	In sum, numerous scientific and economic analyses show that the assumption of near-perfect substitution for U.S. oil and gas production is unfounded and unreasonable, and dramatically misrepresents the significant greenhouse gas and climate impacts from oil and gas leasing.	BOEM's model makes a reasonable approximation of the emissions from consumption associated with the Coastal Plain production and the energy substitutes under the No Action Alternative. BOEM continually reviews its models and assumptions and may make further changes.

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205.	Brook	Brisson	Trustees for Alaska	98269	107	Climate and Meteorology	The DEIS underestimates methane emissions by failing to address or account for available scientific information indicating that the EPA inventory emissions estimates on which BLM relies vastly underestimate emissions. As described above, the estimate of methane emissions from the proposed Coastal Plain program in the DEIS is calculated using data from the U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (April 2018). Recent scientific science published in June of 2018 indicates that the magnitude of methane leakage in 2015 from oil and gas supply chain emissions were about 60% higher than the U.S. Environmental Protection Agency inventory estimate for that year. ⁵⁷⁶ The study suggests that this discrepancy exists because current EPA inventory methods miss emissions that occur during abnormal operating conditions. ...	The EPA's Greenhouse Gas Inventory Report is the best available published source for reporting annual U.S. greenhouse gas emissions and is appropriate for use in this EIS.
206.	Brook	Brisson	Trustees for Alaska	98269	109	Climate and Meteorology	Global Warming Potential ("GWP") is a concept that is critical to understanding any estimate of methane emissions made for the purpose of assessing climate change impacts. ... Notably, the DEIS makes no mention of this concept whatsoever in its discussion of methane. ...	The final EIS has been edited to include a discussion of GWP.
207.	Brook	Brisson	Trustees for Alaska	98269	110	Climate and Meteorology	The US EPA Inventory uses the GWPs for the 100-year time frame only. Consequently, the calculations in the DEIS present methane emissions only in terms of the equivalence to CO2 over a 100-year timeframe. If the DEIS also considered the climate change impacts of its actions over a shorter time frame, and calculated the methane emissions in light of the GWP for a 20 year timeframe, the methane emissions, expressed in CO2 equivalents, would be approximately 2.7 times greater than the amount	The primary concern with GHG emissions is long-term climate change, leading to rising ocean levels and gradual warming of the oceans and atmosphere over longer time scales; therefore, the 20-year horizon effect of GHGs is less of a concern than the 100-year horizon. The primary moderator of Earth's temperatures is the oceans, which embody the vast majority of the thermal inertia of the whole land-ocean-cryosphere-atmosphere system. It takes time to change the

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207. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	presented in the DEIS. Notably, EPA itself makes clear that the use of the 100-year timeframe in its inventory is based on a political agreement between nations to standardize how emissions are reported under the United Nations Framework Convention on Climate Change, and that other time horizons are available. ⁵⁸¹ BLM itself has at times considered the 20-yr GWP in addition to the 100-yr GWP. ⁵⁸²	bulk average ocean temperature because of its huge thermal inertia; therefore, a relatively short-lived GHG like methane cannot have a large impact on global climate. Nonetheless, if the BLM considers the 20-year GWP horizon, and the commenter's multiplier of 2.7 is correct for methane (compared with the 100-year horizon), the methane portion of the Coastal Plain development-related GHG emissions would be 5 percent (methane portion of CO₂e from Draft EIS) multiplied by 2.7, or 13.5 percent of the CO₂e for a 20-year horizon. Given the GHG estimates for the Coastal Plain program area are order of magnitude estimates (given uncertainty in recoverable oil), this marginal change would not appreciably affect the estimated GHG emissions, and the portion of national or global emissions represented by the development. Finally, regarding methane's overall importance to the climate, modeled estimates of methane's radiative forcing (RF) over the last several decades show that it has essentially flattened out, despite the large increase in U.S. drilling activity in the last decade, and the increased production of natural gas. In contrast, the calculated RF for CO₂ continues to increase rapidly (see Figure 2-5 of the Fourth National Climate Assessment); therefore, it is more important to focus on CO₂ emissions and the effects of all GHGs combined over long (100-year) time horizons.

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208.	Brook	Brisson	Trustees for Alaska	98269	112	Climate and Meteorology	By ignoring the importance of GWP timeframe entirely, the DEIS has failed to take a hard look at the impacts of methane from the Coastal Plain program. The impacts of increased methane emissions over a timeframe of 20 years are highly relevant in particular in light of the most recent report from the IPCC, which concluded that significant emissions reduction are necessary by 2030 to avoid the most devastating impacts of climate change as discussed in detail below. In particular, deep reductions of methane and other short-lived GHG emissions are required to limit global warming to 1.5°C with no or limited overshoot (at least 35% reductions in both methane and black carbon by 2050 relative to 2010).	The primary concern with GHG emissions is long-term climate change, leading to rising ocean levels and gradual warming of the oceans and atmosphere over longer time scales; therefore, the 20-year horizon effect of GHGs is less of a concern than the 100-year horizon. The primary moderator of Earth's temperatures is the oceans, which embody the vast majority of the thermal inertia of the whole land-ocean-cryosphere-atmosphere system. It takes time to change the bulk average ocean temperature because of its huge thermal inertia. Nonetheless, if the BLM considers the 20-year GWP horizon, and the commenter's multiplier of 2.7 is correct for methane (compared with the 100-year horizon), the methane portion of the Coastal Plain development-related GHG emissions would be 5 percent (methane portion of CO ₂ e from Draft EIS) multiplied by 2.7, or 13.5 percent of the CO ₂ e for a 20-year horizon. Given the GHG estimates for the Coastal Plain program area are order of magnitude estimates (given uncertainty in recoverable oil), this marginal change would not appreciably affect the estimated GHG emissions, and the portion of national or global emissions represented by the development.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
209.	Brook	Brisson	Trustees for Alaska	98269	113	Climate and Meteorology	BLM also fails to estimate black carbon emissions from Arctic Refuge drilling, despite the fact that our groups provided detailed information about black carbon and its impacts in our scoping comments. According to EPA, black carbon "is now recognized as an important climate-forcing agent with particular impact on the arctic region."585	Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.

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210.	Brook	Brisson	Trustees for Alaska	98269	114	Climate and Meteorology	Several types of fuel sources, including fossil and biomass, emit black carbon, but in differing ratios. Diesel engines are a particularly important source, with up to 80% of its sub-2.5 micrometer particulate matter (PM2.5) composed of black carbon. ⁵⁹³ PM2.5 (and smaller), in addition to being a climate-forcing material through altered albedo, is also associated with human health impacts, particularly cardiovascular and respiratory ailments. ⁵⁹⁴ The flaring of natural gas is another important source of black carbon, particularly in the Arctic, where it contributes 42% of the annual mean black carbon concentration, and 52% of the concentration in March. ⁵⁹⁵ when it could have significant effects on early spring ice dynamics. Given these impacts, the eight-nation Arctic Council in April 2015 adopted a framework agreement to hasten reduction of black carbon and methane emissions, in which those nations (including the U.S.) committed to taking "enhanced, ambitious, national and collective action to accelerate the decline in our overall black carbon emissions." ⁵⁹⁶	Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
211.	Brook	Brisson	Trustees for Alaska	98269	115	Climate and Meteorology	BLM fails to estimate the emissions of black carbon from Arctic Refuge drilling or identify potential mitigation measures when discussing air quality impacts and climate change.	Black carbon tends to fall out of the atmosphere relatively quickly. The primary concern with this substance in the Arctic is that when it deposits on snow and ice, it can increase melting rates by increasing absorption of solar energy. The proposed action is not expected to result in large amounts of black carbon emissions, as modern equipment, including flares, are designed to minimize these particulate matter emissions. Also, the EPA's low sulfur diesel standards have decreased emissions of such particulates from engines using diesel fuel. Furthermore, any black carbon that does deposit on snow and ice has a relatively short lifetime of a year to perhaps a few years, before the particles become part of the soil or the ocean sediment.
212.	Brook	Brisson	Trustees for Alaska	98269	116	Climate and Meteorology	The DEIS fails to assess the individual and cumulative impacts of the GHG emissions that will result from the program. There is no assessment of the climate change impact associated with the anticipated emissions. Nor does the DEIS adequately analyze the impacts of climate change on the resources of the Refuge. Moreover, there is no assessment of how the proposed action, cumulatively with other similar actions being taken by BLM nationwide, will cause impacts through climate change, or undermine attainment of the carbon budget and emissions reductions that are urgently necessary to address disastrous climate change impacts.	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
213.	Brook	Brisson	Trustees for Alaska	98269	117	Climate and Meteorology	Instead of providing any analysis whatsoever of the impact of the action's contribution to climate change, when considered cumulatively with other reasonably foreseeable drivers of climate change, the DEIS states: The potential cumulative climate impacts of global development and associated GHG emissions have been discussed extensively in the published literature, including several reports by the Intergovernmental Panel on Climate Change and numerous scientific journals, and therefore, are not repeated here (BLM 2018a; IPCC 2014; Melillo et al. 2014; ACIA 2005). The DEIS does not even provide a summary of the conclusions of the documents that it cites. The total absence of any analysis considering how the contribution of the emissions from the Coastal Plain oil and gas program action alternatives will interact with other sources of emissions to exacerbate the impacts of climate change violates the requirement to take a hard look at the cumulative impacts of the action being studied.	Pages 3-6 through 3-9 of the Draft EIS show the direct GHG emissions from post-lease oil and gas activities and indirect GHG emissions from combustion of net fuels production exported to market. It is not possible to attribute global climate consequences to a single project. As such, reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
214.	Brook	Brisson	Trustees for Alaska	98269	118	Climate and Meteorology	Courts have made clear that agencies cannot incorporate non-NEPA documents by reference as a substitute for providing analysis of an impact in the EIS itself, as BLM has attempted to do here. ⁵⁹⁸ Further, agencies cannot avoid analysis by purporting to “tier” to other NEPA documents that themselves do not contain analysis that evaluates the specific impact in question. ⁵⁹⁹ BLM’s reference to the SEIS for the GMT2 project (“BLM 2018a”) does not provide an analysis of the cumulative effects of Coastal Plain leasing on climate change. Most obviously, the GMT2 SEIS evaluates a project producing vastly less oil and gas than BLM projects for the Coastal Plain leasing program. ⁶⁰⁰	The reference to GMT2 and other non-NEPA documents was for discussion of the general cumulative effects of climate change. Because global climate change by its nature is only a cumulative issue, and not an issue for which an individual project’s climate impacts can be parsed out, it is scientifically justified to provide reference to other NEPA and non-NEPA documents for description of the potential effects of cumulative GHG emissions associated with climate change. The impacts that can be attributed specifically to the proposed action are the GHG emissions associated with the action; those impacts are disclosed in the Draft EIS.

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215.	Brook	Brisson	Trustees for Alaska	98269	119	Climate and Meteorology	Moreover, in lieu of an actual cumulative impacts analysis, the GMT2 SEIS merely compares the proportion of oil produced by the GMT2 to the total oil production for Alaska and the US.601 The DEIS concedes that Coastal Plain production will result in a net increase in downstream oil emissions by stimulating demand for oil. For "scale" it presents the net emissions from increased demand as a proportion relative to 2015 total GHG emissions from Alaska, the United States, and the world. Merely presenting emissions or oil volumes relative to totals from other sources, which is what both the GMT2 SEIS and present DEIS do, cannot constitute an adequate analysis of cumulative impacts. In <i>San Juan Citizens All. v. United States Bureau of Land Mgmt.</i> , No. 16-CV-376-MCA-JHR, 2018 WL 2994406, at *14 (D.N.M. June 14, 2018), the district court found that BLM had violated NEPA's requirement to consider cumulative impacts of oil and gas leasing on climate change by asserting that the emissions associated with combustion of all of the oil and gas from the parcels in question would not be different from the no leasing alternative because the total amount of emissions was small compared to total national and global emissions. ...Here, BLM provides even less analysis than what the court rejected in that case, as it draws no conclusion whatsoever about the climate change exacerbating consequences of increased emissions resulting from the Coastal Plain leasing program.	The scope of climate analyses has been raised in many prior EIS efforts, with the resulting guidance from federal officials that it is not possible to attribute global climate consequences to a single project. Section 3.2.1 of the Draft EIS discloses potential direct and indirect (downstream) GHG emissions associated with oil and gas-related activities on the Coastal Plain. Reporting potential GHG emissions from a plan or project and comparing these emissions with emissions at larger scales provide context for decision makers and the public; it is appropriate for a NEPA analysis.

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216.	Brook	Brisson	Trustees for Alaska	98269	124	Climate and Meteorology	The EIS captures none of this recent research, and instead relies almost entirely on outdated information. Specifically, instead of conducting the required analysis, the EIS inappropriately attempts a shortcut in the impacts discussion: "Regarding the potential effects of climate change on the region in general, the reader is referred to Section 3.2.4 of the GMT2 [Greater Mooses Tooth 2] Final SEIS for a detailed discussion."⁶⁰⁸ The referenced section, Sec. 3.2.4 of the GMT2 SEIS,⁶⁰⁹ does not, in fact, contain a detailed discussion or the potential impacts of climate change on the region. Instead, it contains the following text: "Potential climate change impacts in the project study area remain essentially as described in BLM 2014 (Greater Mooses Tooth One SEIS), Section 3.2.4.3, and are summarized as follows. . ." The climate change impacts discussed in Section 3.2.4 in the GMT1 SEIS⁶¹⁰ document, to which the coastal plain EIS is attempting to tier, relies primarily on the 2012 "The United States National Climate Assessment - Alaska Technical Regional Report."⁶¹¹ That document, which at the time was a recent and credible information source, is thus now nearly seven years out of date. In a region that "is among the fastest warming regions on Earth,"⁶¹² ignoring the past seven years' worth of readily available, credible scientific information in the analysis is a grievous oversight.	Section 3.2.4 of the GMT2 Final SEIS contains information on climate change in the Arctic and climate change on the North Slope. These discussions were thus incorporated by reference in the Coastal Plain Draft EIS. The Final EIS for the Coastal Plain program includes reference to UAF's ACRC data summaries (e.g., http://akclimate.org/ClimTrends/Change/TempChange.html) and reference to updated ACRC data showing more recent climate trends in Alaska.

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217.	Brook	Brisson	Trustees for Alaska	98269	131	Climate and Meteorology	Instead of conducting an actual analysis of direct, indirect and cumulative effects, the EIS simply resorts to repeating the following sentence: "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential direct and indirect impacts" under "Direct and Indirect Impacts" and "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential cumulative impacts" under "Cumulative Impacts" ... Nowhere does the EIS reckon with the nature of these impacts or how the impacts of climate change will interact with the impacts of oil and gas leasing and exploration. This failure to do an even qualitative assessment violates NEPA's requirement to take a "hard look" at these impacts.	The ongoing effects of climate change on specific natural and human resources in the Arctic are described in the Climate Change subsection of the Affected Environment resource sections. The Final EIS cumulative effects sections have been updated to include more information on the synergistic effects of Coastal Plain development and climate change on affected resources.

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218.	Brook	Brisson	Trustees for Alaska	98269	132	Climate and Meteorology	The DEIS also entirely fails to examine how the program will undermine attainment of the carbon budgets necessary to stabilize climate change. The DEIS totally fails to consider the cumulative impacts in light of the recent (2018) IPCC reports outlining the urgent need for drastic and sustained GHG reductions by 2030 to avoid the most disastrous consequences of climate change. BLM has totally failed to consider how the impact of the Coastal Plain leasing, cumulatively with reasonably foreseeable emissions from the federally managed mineral estate within BLM's jurisdiction, will influence the severity and timing of climate change impacts. This information is of obvious relevance to BLM's decision-making because BLM retains broad discretion to impose stipulations on the Coastal Plain leasing to defer the timing of production activities. A proper analysis of the cumulative impacts of the proposed action on climate change would provide information needed to evaluate how the timing of production could be delayed or otherwise conditioned to, inter alia, avoid stimulating demand.	Oil produced as a result of the proposed action would in large part displace oil production from other global deposits, with only a small effect on market demand. Thus, delaying production from this resource would have a negligible effect on the potential for global climate change due to GHG emissions.

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219.	Brook	Brisson	Trustees for Alaska	98269	133	Climate and Meteorology	In sum, oil and gas development in the Arctic is a critical issue for the current administration to reexamine as it assesses how to bring its supply-side policies in line with international commitments to combat climate change, and how to meet climate targets based on sound science and economics. This analysis must assess how reducing the supply of oil from federal lands can affect global oil markets and lead to a reduction in demand and a resulting reduction in GHG pollution. Oil and gas production requires investments in capital-intensive, high-carbon fuel infrastructure that resists being shut down and locks in long-term fuel supplies, making it more difficult and expensive to later shift to a low-carbon pathway and reach greenhouse gas targets. ⁶⁴⁰ BLM must acknowledge that drilling in the Arctic Refuge is inconsistent with maintaining a livable planet.	The BLM does not agree that the proposed development is inconsistent with maintaining a livable planet (i.e., there is not a climate crisis). The planet was much warmer within the past 1,000 years, prior to the Little Ice Age, based on extensive archaeological evidence (such as farming in Greenland and vineyards in England). This warmth did not make the planet unlivable; rather, it was a time when societies prospered.

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220.	Brook	Brisson	Trustees for Alaska	98269	134	Climate and Meteorology	Therefore, even though greenhouse gas emissions from the proposed program may look minor when viewed on the scale of the global climate crisis, when considered cumulatively with all of the other GHG emissions from BLM-managed land, they become significant and cannot be ignored. Moreover, this analysis is of obvious relevance to determinations within BLM's discretion here, such as how to condition lease terms, and qualifying the rights associated with any leases issued to ensure that BLM meets its substantive mandates to, inter alia, prevent undue and unnecessary degradation, ensure that its actions do not jeopardize ESA-listed species, use its resources to recover such species, and preserve the values of the Refuge for its priority purposes, as required by the Improvement Act and ANILCA. In particular, this analysis is relevant to the question of whether the lease terms should defer production until such as time as carbon reduction requirements to address climate change have been met.	The BLM does not agree that the proposed development is inconsistent with maintaining a livable planet (i.e., there is not a climate crisis). The planet was much warmer within the past 1,000 years, prior to the Little Ice Age, based on extensive archaeological evidence (such as farming in Greenland and vineyards in England). This warmth did not make the planet unlivable; rather, it was a time when societies prospered.
221.	Brook	Brisson	Trustees for Alaska	98269	135	Climate and Meteorology	In assessing the cumulative impact, BLM must consider recent climate science and carbon budgeting, and must consider how opening additional lands to fossil fuel leasing, in combination with other reasonably foreseeable and occurring BLM leasing, will undermine attainment of the emissions reductions necessary now to prevent the worst impacts of climate change from occurring.	The BLM does not agree that the proposed development is inconsistent with maintaining a livable planet (i.e., there is not a climate crisis). The planet was much warmer within the past 1,000 years, prior to the Little Ice Age, based on extensive archaeological evidence (such as farming in Greenland and vineyards in England). This warmth did not make the planet unlivable; rather, it was a time when societies prospered.

S. Public Comments and BLM Responses (Climate and Meteorology)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
222.	Brook	Brisson	Trustees for Alaska	98269	136	Climate and Meteorology	To meet NEPA's requirements for the consideration of cumulative impacts, BLM must consider the emissions anticipated from the Coastal Plain program in light of the urgent need for reductions identified by the IPCC.	The BLM does not agree that the proposed development is inconsistent with maintaining a livable planet (i.e., there is not a climate crisis). The planet was much warmer within the past 1,000 years, prior to the Little Ice Age, based on extensive archaeological evidence (such as farming in Greenland and vineyards in England). This warmth did not make the planet unlivable; rather, it was a time when societies prospered.
223.	Brook	Brisson	Trustees for Alaska	98269	137	Climate and Meteorology	Moreover, BLM's consideration of alternatives must include alternatives that consider how BLM can use its discretion to mitigate these [climate change] impacts, for example, by lease terms that defer production.	The BLM does not agree that the proposed development is inconsistent with maintaining a livable planet (i.e., there is not a climate crisis). The planet was much warmer within the past 1,000 years, prior to the Little Ice Age, based on extensive archaeological evidence (such as farming in Greenland and vineyards in England). This warmth did not make the planet unlivable; rather, it was a time when societies prospered.
224.	Brook	Brisson	Trustees for Alaska	98269	138	Climate and Meteorology	Though calculating the positive economic impacts of the projected oil and gas extraction, 722 the DEIS fails to ascertain the costs associated with the contribution to climate change resulting from its decision, or the economic benefits of avoiding or delaying carbon emissions. Consequently, the economic analysis is slanted and misrepresents the economic consequences of the proposed action. The DEIS fails to provide the information necessary to assess the magnitude of the negative consequences associated with the plan's contribution to climate change, and to assess those impacts in economic terms.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
225.	Brook	Brisson	Trustees for Alaska	98269	139	Climate and Meteorology	The DEIS also fails to provide the information necessary to assess the economic benefits from the avoided emissions that would result from deferring production under the leases. In other words, the DEIS fails to consider whether delaying production is a more economically efficient way of keep carbon sequestered, and therefore remaining within carbon budgets, than other methods of reducing carbon emissions. Without adequate information to make such comparisons, the EIS is skewed, inflating the apparent economic benefits of the oil and gas production while obscuring its economic harms.	The BLM has reviewed this comment and determined that SCC is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the Draft EIS.

S.3.7 Cooperating Agency Relationships

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Peter	Stern	—	69296	96	Cooperating Agency relationships	It is interesting that no where in the document is there a reference to consulting with the FAA. Restrictions to flight operations or safety of flights within the lease area would involve the FAA. When permitting for development phases occurs, BLM must involve the FAA to ensure good safety standards for flight operations are in place. Flying weather in this part of the north slope can be poor at certain times of the year. Aircraft tracking ADSB/GPS, ground based transceiver (GBT) equipment and instrument approaches for airports must be required. FAA should ensure that the ASOS/AWOS equipment in Kaktovik is modernized and under maintenance.	The BLM will consult with the appropriate entities on future oil and gas activities. See footnote 1, Table 2-2. All permitted oil and gas activities must comply with FAA requirements.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	72125	13	Cooperating Agency relationships	The role of the Fish and Wildlife Service must be documented. Under DOI regulations at 43 CFR § 46.225(d), bureaus should work with Cooperating Agencies to develop and adopt an Memorandum of Understanding that describes their respective roles, assignment of issues, schedules, and staff commitments. The Fish and Wildlife Service must control surface use decisions. In administering the Arctic National Wildlife Refuge, the Fish and Wildlife Service is required to control and direct the Refuge by regulating human access in order to conserve the entire spectrum of wildlife found in the Refuge. Abdicating or transferring surface resource planning and management responsibilities from the Fish and Wildlife Service to the Bureau of Land Management would be contrary to the refuge administration requirements of the Refuge Administration Act and ANILCA.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.
3.	Withheld	Withheld	—	72125	18	Cooperating Agency relationships	The legislative direction for a 2,000-acre limit is for the purpose of limiting impacts to surface resources. As such, the Fish and Wildlife Service should provide guidance for applying this direction to oil and gas developments within the Arctic Refuge. The Fish and Wildlife Service must approve reclamation plans and monitor restoration results to ensure that the function of disturbed areas once again provide for the conservation of fish and wildlife in their natural diversity.	Although the BLM intends to consult with the USFWS as noted in footnote 1 of Table 2-2, Section 20001(a)(2) the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	72125	37	Cooperating Agency relationships	(Section 2.2): * The DEIS describes in this section that the Fish and Wildlife Service role for surface resource decisions as that of only coordination for such actions as plan development. The BLM has erred in not recognizing the Fish and Wildlife Service authority and responsibility to protect surface resources through comprehensive conservation planning, while coordinating with the BLM for the refuge purpose of providing for an oil and gas program on the Coastal Plain.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	13	Cooperating Agency relationships	the Associations request that the FEIS include a transparent description of the relationship between BLM's oil and gas program authority and FWS's land management authority. Specifically, BLM has the duty to fully administer the oil and gas program mandated by Congress, including the authority to directly manage lands in the Coastal Plain as necessary to do so. Although FWS is the manager of ANWR, its management of the Coastal Plain is subject to the provisions of the Tax Act and the revised purpose of ANWR "to provide for an oil and gas program on the Coastal Plain." ⁶⁵ This new direction and purpose from Congress controls management of the Coastal Plain, and FWS's authority must be exercised accordingly. ⁶⁶ 65 Pub. L. No. 115-97, § 20001(b)(2)(B) (amending purpose of ANWR in ANILCA section 303(2)(B)). 66 It is important to note that FWS's 2015 Comprehensive Conservation Plan for ANWR, which refused to consider oil and gas development, has been superseded with respect to management of the Coastal Plain by the Tax Act and the revised purpose of the Coastal Plain under ANILCA. The Wildlife Refuge Administration Act of 1966 requires a wildlife refuge to be managed in a manner which "first protects the purposes of the refuge"- now, "to provide for an oil and gas program on the Coastal Plain." See 16 U.S.C. § 668dd(A)(3)(D); ANILCA § 303(b)(2). The purposes of a refuge are defined by reference to the law(s) which created it. See 16 U.S.C. § 668ee(10). Management of the Coastal Plain of ANWR must now conform to the actions of Congress as set forth in the Tax Act and its revision of ANILCA section 303(b)(2) for the Coastal Plain.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions. The USFWS CCP (2015) will be revised to reflect all purposes of the Arctic Refuge within the Coastal Plain, as amended by the Tax Act. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic Refuge, including "to provide for an oil and gas program on the Coastal Plain."

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	1	Cooperating Agency relationships	BLM and FWS should explain the dual agency management of the 1002 Area While the legislation opening the 1002 Area to resource development clearly authorizes BLM to administer leasing in the Program Area, the DEIS is not clear on BLM's role over unleased land, or how unleased land will be managed in the Coastal Plain consistent with the direction of Congress. ASRC encourages BLM to clearly delineate its and FWS jurisdiction and roles with respect to managing activity in the Program Area. Without this clear designations of roles, ASRC is concerned there will be uncertainty on how future oil and gas programs are managed, permitted, and guaranteed Right of Ways and access. BLM and FWS should specifically consider the instance of Program Area-wide seismic program as is assumed in the Reasonably Foreseeable Development Scenario, road and pipeline access through unleased land, gravel excavation, and leases surrounded by unleased land.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.
7.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	33	Cooperating Agency relationships	VOICE and others brought forward local concerns in scoping comments that the BLM should revisit in the Final EIS. The BLM should work closely with the residents of Kaktovik on pressing access issues that have restricted the community since the creation of ANWR. For leasing and development to be successful, these issues must be resolved and the BLM's action on the following topics through the NEPA process would be a great show of respect to the Kaktovikmiut and their 14,000 years of history as owners of these lands.	The BLM worked with Native Village of Kaktovik throughout the development of the EIS through the cooperating agency process and government-to-government consultation. See footnote 1 of Table 2-2.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	36	Cooperating Agency relationships	In our scoping comments, based on conversations that we had with the Native Village of Kaktovik, VOICE recommend the BLM work to find ways to assist NVK in increasing their capacity to engage effectively and provide meaningful feed-back throughout the NEPA process. Currently, the NVK has two employees that are struggling to make sure the views of Kaktovik are adequately considered and addressed in this process and are overwhelmed by the FWS, who speak on behalf of the Refuge, and the Native American Rights Fund, who are providing technical assistance to cooperating agencies representing Gwich'in communities. Effective engagement from Kaktovik, the only community in the Coastal Plain, is essential and should be of primary importance to the BLM. We hope that the BLM will continue this conversation and will work with NVK to identify re-sources that are available to them and how they can take advantage of those resources. This assistance only becomes more important as the BLM moves to subsequent stages of development and authorization for on the ground activities in the Coastal Plain.	The BLM worked with Native Village of Kaktovik throughout the development of the EIS through the cooperating agency process and government-to-government consultation. See footnote 1 of Table 2-2.
9.	—	—	Alaska Department of Natural Resources	94102	4	Cooperating Agency relationships	The State and North Slope Borough each also have permitting authority and responsibilities for work proposed within the Coastal Plain. The overlapping federal, State, and local jurisdictions result in a robust regulatory framework that BLM must anticipate during development of this programmatic EIS.	Appendix D of the Draft EIS summarizes the requirements of federal, state, and local laws and regulations associated with future development in the Coastal Plain.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	—	—	Alaska Department of Natural Resources	94102	93	Cooperating Agency relationships	We have appreciated the opportunity to participate as a cooperating agency and contribute technical staff resources to the IDT during development of the EIS to date. To ensure our continued coordination in developing a responsible and competitive oil and gas leasing program, we specifically request the following opportunities for coordination as we approach the conclusion of the NEPA process: * Invite State IDT members to participate on the strike team in addressing substantive comments received on the Draft EIS, and * Provide cooperating agencies with an administrative review period of the preliminary Final EIS, to include BLM's preferred alternative with the complete terms and conditions proposed to be included in the Record of Decision.	The BLM invited representatives from the State of Alaska to participate in the interdisciplinary team, which included addressing substantive comments on the Draft EIS. All cooperating agencies, including the State of Alaska, were provided the opportunity to review the administrative draft Final EIS, which included the BLM's responses to substantive Draft EIS public comments.
11.	Withheld	Withheld	—	94547	1	Cooperating Agency relationships	The DEIS does not appear to answer the following questions (1, 3, 4, 5 below) or address item (2) below. 1. How will oil and gas development affect USFWS administration of the coastal plain?	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Edward	Rexford	Native Village of Kaktovik	95607	13	Cooperating Agency relationships	NVK is concerned about the management of any unleased land in the Coastal Plain. The final EIS should make clear who is responsible for management decisions on those lands. Currently, the FWS, through their CCP, manages land in the Coastal Plain as wilderness, which we find incompatible with the purpose of the Leasing Program - to establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain. The CCP must be updated prior to a lease sale to be compatible with this purpose set forth in the Tax Act. The FWS has a responsibility not to hinder the pursuit of a successful oil and gas program through burdensome restrictions on adjacent lands that would ultimately hurt local stakeholders - as well as the State of Alaska and the federal government, whom each have a 50% revenue interest in ANWR. Further, dual management of the 1002 Area would create a "patchwork" of land managers - between privately held KIC lands, BLM managed leased lands, and FWS managed unleased lands, NVK feels that this could be burdensome to right of ways and create confusion around subsistence access.	The FWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns BLM the sole responsibility for making such decisions. The USFWS CCP (2015) will be revised to reflect all purposes of the Refuge within the Coastal Plain, as amended by the Tax Act
13.	Brook	Brisson	Trustees for Alaska	98269	17	Cooperating Agency relationships	CEQ regulations call for early and significant involvement by other federal agencies with jurisdiction by law or special expertise. ²⁹² While the draft EIS lists the Environmental Protection Agency and U.S. Fish & Wildlife Service as other federal cooperating agencies, it inexplicably does not include the U.S. Geological Survey (USGS) or the National Marine Fisheries Service (NMFS) - both of which have significant and critical expertise relevant to the development of an oil and gas program for the Coastal Plain.	The BLM made a reasonable effort to identify and invite any federal, state, local, and tribal entities possessing jurisdiction by law or special expertise concerning the Coastal Plain EIS. The BLM invited the USGS to be a cooperating agency, but they declined the invitation. The BLM did not receive a request from the NMFS to be a cooperating agency.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Brook	Brisson	Trustees for Alaska	98269	18	Cooperating Agency relationships	Additionally, it appears that existing cooperating federal agencies' participation has been truncated or limited. Specifically regarding FWS, there are numerous issues and impacts identified by BLM that are highly relevant to FWS's administration and management of the Refuge, but it is unclear how BLM and FWS are working to address these issues or how FWS will undertake its independent obligations in light of the oil and gas program.	As a cooperating agency, the USFWS has actively participated in the development of the EIS, including scoping, development of draft alternatives, lease stipulations, and ROPs, and review of the administrative Draft and EIS. The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Brook	Brisson	Trustees for Alaska	98269	24	Cooperating Agency relationships	Despite having raised this issue during scoping, BLM fails to fully acknowledge or explain FWS's role. While BLM states that FWS "is the predominate land manager in the program area," ³²² BLM does not explain what this means. To be clear, FWS is the sole administrator of the Arctic Refuge. BLM has failed to explain how FWS's superior role impacts both BLM's management of the oil and gas program as well as how the oil and gas program fits into FWS's administration of the Refuge overall. In other situations where DOI has granted some measure of jurisdiction over refuge management to agencies other than FWS, courts and Congress have clarified that the ultimate decisions about resource uses, impacts, mitigation, and regulatory compliance must be made by FWS. ³²³ In particular, as the court recognized in <i>Trustees v. Watt</i> , ANILCA and the NWRSA mandate that refuges be administered solely by FWS; split administration is not permitted. ³²⁴ As the sole administrator of the Arctic Refuge, FWS has a superior role to BLM, and no administration functions may be performed by BLM. The EIS must be revised to explain and accurately characterize this structure.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions.
16.	Brook	Brisson	Trustees for Alaska	98270	6	Cooperating Agency relationships	We reiterate those concerns by reference here, and urge BLM not only to rectify the DEIS' errors in this regard but also to clarify and improve its proposed mitigation measures, ¹⁵⁹⁹ and add the National Marine Fisheries Service as a cooperating agency, ¹⁶⁰⁰ to ensure that the DEIS, lease stipulations, and required operating procedures are grounded in the best available scientific information on large whales and that lease stipulations and required operating procedures scrupulously adhere to the requirements of the ESA and MMPA.	The BLM made a reasonable effort to identify and invite any federal, state, local, and tribal entities possessing jurisdiction by law or special expertise concerning the Coastal Plain EIS. The BLM did not receive a request from the NMFS to be a cooperating agency. As stated in the EIS, project approval would be on a case-by-case basis, in consultation with the USFWS or NMFS, or both, as appropriate.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Brook	Brisson	Trustees for Alaska	98270	182	Cooperating Agency relationships	The U.S. Coast Guard has both jurisdiction and special expertise regarding the risks and impacts of the shipping activities associated with the proposed action.1975 For example, the Coast Guard has broad legal authorities relating to discharges of oil and hazardous substances.1976 It is, in fact, the lead agency for such issues in the "coastal zone" (as opposed to the "inland zone" where EPA authority takes precedence).1977 The Coast Guard also inspects, certifies, and regulates vessels with respect to a wide range of pollution and environmental standards,1978 and it has extensive authority over and expertise relating to navigation safety, ship routing, and vessel traffic management.1979 Further, the Coast Guard plays an important role in protecting fisheries and marine life through its enforcement authorities under several wildlife and marine conservation laws,1980 as well as its capabilities and resources for responding to wildlife strandings, entanglements, and other similar situations.1981 For all these reasons, we urge BLM to add the U.S. Coast Guard as a cooperating agency in the preparation of the Coastal Plain Oil and Gas Leasing Program EIS and to give it sufficient time and opportunity to participate meaningfully in the development of a revised EIS.	The BLM made a reasonable effort to identify and invite any federal, state, local, and tribal entities possessing jurisdiction by law or special expertise concerning the Coastal Plain EIS. The BLM did not receive a request from the Coast Guard to be a cooperating agency.

S. Public Comments and BLM Responses (Cooperating Agency Relationships)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Brook	Brisson	Trustees for Alaska	98270	183	Cooperating Agency relationships	Additionally, NMFS has both jurisdiction and special expertise concerning the risks and impacts of shipping activities on marine mammals.1982 As such, NMFS should be added as a cooperating agency for this NEPA process just as it served as a cooperating agency in connection with the Liberty oil and gas project discussed above.1983 BLM appears to be consulting with NMFS with respect to ESA issues,1984 but that is not a substitute for full cooperating agency status to ensure that NMFS's expertise is utilized and incorporated into the EIS with respect to the wide range of risks and impacts arising from shipping activities near the program area and along the 1,600 mile marine barge route.1985	The BLM made a reasonable effort to identify and invite any federal, state, local, and tribal entities possessing jurisdiction by law or special expertise concerning the Coastal Plain EIS. The BLM did not receive a request from the NMFS to be a cooperating agency. As stated in the Draft EIS, project approval would be on a case-by-case basis, in consultation with the USFWS or NMFS, or both, as appropriate

S.3.8 Cultural Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	F	Chapin	—	29337	4	Cultural Resources	As the EIS correctly notes (pages 3-152, 3-156, and 3-157), there has been only one 20-day systematic survey to search for archeological and other historical and cultural sites in the ANWR coastal area. Additional surveys would be required to adequately evaluate the impact of oil development on historical and cultural sites in the region. In addition, the interaction of development and climate change will make these sites more vulnerable to erosion than if no development were to occur. The extent of this increased vulnerability due to interaction of climate change and development is not considered in the EIS.	Additional information regarding the vulnerability of cultural resources due to climate change has been added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	F	Chapin	—	29337	6	Cultural Resources	As the EIS correctly notes (pages 3-156, 3-157, 3-175, and 3-201), the extensive landscape impacts of oil development on the 1002 region will impact cultural resources well beyond the direct footprint of development, and these impacts could occur throughout the construction, operation, and remediation phases of the program. The development will therefore have extensive permanent impacts (pages 3-248 and 3-249) on the lands that these people consider as sacred. The importance of these extensive permanent changes is not adequately considered in the EIS.	The EIS analyzes the potential indirect impacts as a result of all phases of an oil and gas leasing program, as well as identification of mitigation measures to mitigate potential impacts (Table 2-2). In addition, when projects are proposed, a site-specific NEPA analysis will identify additional mitigation measures to ensure cultural resources are protected as necessary.
3.	Matthew	Rexford	Native Village of Kaktovik	74308	8	Cultural Resources	Section 3.4.2 Cultural Resources This section biases the Gwich'in people of the Interior over the Iñupiat people, the Kaktovikmiut, who are the actual residents of the Coastal Plain. The Kaktovikmiut subsist, live, raise our families within the bounds of the Program Area but are barely mentioned in the section. This presents a subjective, biased analysis, is insulting and must be fixed.	Additional information regarding the importance of the Coastal Plain to the Kaktovikmiut has been added to this section and Section 3.4.3
4.	Rosa	Brown	Vuntut Gwitchin Government	74326	12	Cultural Resources	Cultural Resources The cultural resources section fails to provide the traditional knowledge to address potential impacts on the Gwich'in people from industrial activities in "The Sacred Place Where Life Begins," that could harm this significant ethnographic cultural resource. The National Historic Preservation Act requires BLM to meaningfully pursue consultation for all Gwich'in communities along the historic migration path of the Porcupine Caribou Herd. ²⁹ The geographic scope for cultural resources, both existing environmental baseline and impact analysis, was too limited because it only included the Coastal Plain (program area) for direct/indirect impacts, and the "North Slope" (in the US) for cumulative impacts (draft EIS Vol. II. p. F-31). By definition, Bureau of Land Management	The EIS has been revised to more fully analyze transboundary impacts, where applicable. This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require an additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	excluded the Vuntut Gwitchin First Nation in the direct cultural resources analysis despite the transboundary cultural effects and our reliance on the Porcupine caribou herd. The draft EIS assumed that "all surveyed areas of the program area could include cultural resources. Furthermore, past surveys have been cursory and likely did not adequately identify cultural resources." (draft EIS Vol II p. F-31) It is possible that additional cultural periods are represented on the Coastal Plain, and evidence could be revealed with adequate surveys. Note: the chronology of archeology survey periods, "Cultural themes and period of the Arctic Refuge Area," (Table 3-25) fail to list the Gwich'in and their distinct language and homelands. The Alaska Heritage Resource Sites list shows most are historic or Modern, while others are "prehistoric," or "Protohistoric" without any indication of their heritage (Iñupiat, Gwich'in, or others) see Table L-1). Only Iñupiat Traditional Land Use Sites for the Coastal Plain itself were listed (Table L-2; source listed is for IHLC, Iñupiat History, language and Cultural Division, TLUIS, 2018).	(see above)
5.	Chandra	Turner	Inuvialuit Game Council	75904	26	Cultural Resources	Despite multiple assertions that the EIS reviewed scoping submission comments, references to Inuvialuit subsistence, sociocultural, and historic use of the North Slope are cursory at best. The list of sources consulted in Section 3.4.2 (3-151) does not include any Inuvialuit sources as referred to in the scoping submission. The list of relevant regulations for evaluating the effects on cultural resources (3-151) does not include any relevant international agreements or treaties (see Part 4, above)	The EIS has been revised to more fully analyze transboundary impacts, were applicable. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Tim	Whitehouse	PEER	95601	80	Cultural Resources	What are key information gaps? * Currently there is no complete synthesis of cultural work (subsistence, historical, and archaeological) that has been conducted in the Arctic Refuge as a whole or in particular for the northern half of the Refuge. A limited number of archeological and historical resource surveys have taken place on the Refuge due to funding, logistical difficulties of working in remote locations and lack of infrastructure to support investigations in the Refuge. A more thorough and complete synthesis of what work has been completed and in what areas would help identify informational gaps and help set priorities for future work.	As identified in the comment, limited survey work has been conducted in the program area; the EIS text identifies this fact. Reference to the USACE coastal survey has been added.
7.	Tim	Whitehouse	PEER	95601	82	Cultural Resources	In 2010, Morgan Grover of the US Army Corps of Engineers conducted a survey of 70 known cultural sites along the coastal areas from Flaxman Island to the Canadian border (including the 1002 area) to examine the effects of environmental changes and erosion has had on these sites over the past 30 years. The study concluded that of the 69 previously reported cultural sites, 21 were found to be impacted to some extent by erosion or thermokarsting, and 20 had been completely eroded away. She concludes that many of the remaining cultural sites are in imminent threat of eroding in the next decade. Follow-up studies and research is needed to recover cultural information before it is lost to erosion. The report strongly recommended that selected threatened sites be documented and potentially excavated after consultation and agreement with Tribal leaders.	Additional discussion related to the Grover/USACE report has been added.

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8.	Tim	Whitehouse	PEER	95601	83	Cultural Resources	In 1982, Ed Hall conducted an inventory and survey of archaeological and historical resources in the 1002 area examining areas of high archaeological and historical potential. The areas surveyed were focused on areas proposed for exploratory drilling for oil and gas and areas more likely to have cultural sites such as coastal areas and barrier islands, and along rivers and streams that crossed the 1002 area, and high points of land that have overlooks above the surrounding tundra. There is a need to reassess these areas since visitors and users have reported several graves, human remains and artifacts in these areas that have not been documented and record by professional cultural resource staff.	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.
9.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	5	Cultural Resources	The Section 106 process has not informed the BLM's development, evaluation, and selection of the development alternatives contained in the DEIS, in contravention of the NHPA and its implementing regulations. Furthermore, the DEIS fails to address how the Section 106 process and future consultations will alter and modify the currently-described alternatives and inform the BLM's selection of the ultimate development scenario.	In developing the alternatives, the BLM considered means to protect all key resources, including cultural resources. A primary component of alternatives development was providing for protection of the area the Gwich'in identify as Izhik Gwats'an Gwandaii Goodlit through protection of the caribou calving and post-calving areas. Additional mitigation measures that further avoid, minimize, or mitigate adverse effects on historic properties may be incorporated during site-specific project NEPA analysis.
10.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	11	Cultural Resources	The DEIS defines cultural resources as "the remains of sites, structures, or objects used by humans in the past, historic or prehistoric." (DEIS, at Glossary-4). This definition is confusing and antiquated. It appears to be derived from language in the Antiquities Act of 1906 and does not comply with requirements outlined in the NEPA regulations.	The glossary definition for cultural resources has been revised.

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11.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	14	Cultural Resources	Because the BLM's definition for archaeological resources includes buildings and districts, it is broader than the definition of cultural resources. This is inaccurate and confusing because archaeological resources are a type of cultural resource. (See Figure 1).	The glossary definition for archaeological resources has been revised.
12.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	15	Cultural Resources	The DEIS defines archaeological resources as: places where remnants, such as artifacts, of a past culture survive in a physical context that allows for their interpretation. Archaeological resources can be districts, sites, buildings, structures, or objects and can be prehistoric or historic. (DEIS, at Glossary-1). This definition for archaeological resources is problematic. BLM should explain how buildings and structures are archaeological resources.	The glossary definition for archaeological resources has been revised.
13.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	17	Cultural Resources	Because the DEIS improperly defines cultural resources, it relies on limited data sources and inadequately analyzes impacts on such cultural resources.	The glossary definition for cultural resources has been revised.
14.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	19	Cultural Resources	The BLM also fails to follow its own guidance, which states that the BLM "must describe the analytical methodology sufficiently so that the reader can understand how the analysis was conducted and why the particular methodology was used." ¹⁰ The BLM has failed in this regard because it has not sufficiently described the impact criteria for assessing impacts to cultural resources. This exacerbates the issues with the BLM's methodology and scientific accuracy. The BLM must clearly define impact intensity, duration, context, geographic extent, and magnitude for cultural resources. The BLM did this in its Final Supplemental EIS for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth One Development Project. ¹¹	The organization and approach to analysis in Chapter 3 have been standardized across all resources. See Appendix F for definitions of context, intensity, and duration, and descriptions of impact criteria by resource.

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15.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	20	Cultural Resources	The DEIS describes the limited data sources it reviewed in analyzing impacts to cultural resources. (DEIS, at 3-151). These sources are insufficient. BLM must also review Alaska Native Claims Settlement Act (ANCSA) Section 14(h)(1) records. The U.S. Fish and Wildlife's (USFWS) 2015 ANWR Revised Comprehensive Conservation Plan and Final EIS states that there are: "27 parcels totaling 3,284.34 acres [that] have been conveyed as cemetery sites or historical places. Another five parcels (totaling 1,144.31 acres) are selected but not yet conveyed."12 In addition, the BLM must include locations with Indigenous place names in their cultural resources analysis for this EIS. As the U.S. Army Corps of Engineers stated in its Supplemental EIS for the Alaska Stand Alone Pipeline: Indigenous place names are the manifestation of a systematic approach to mapping a group's environment. Place names can provide information about natural and social environments as well as about human populations and their histories. Place names also provide insights into a culture's worldview and its perceptions of features of the environments it inhabits. Place names are a key component for identifying cultural resources in an area, as well as for establishing territorial range and means of travel throughout a traditional territory (Kari 2006).13 Excluding locations with Indigenous place names is a significant data gap that the BLM must address. For example, one Gwich'in place name in the Program Area is Sallute (Point Collinsion).14 Furthermore, BLM has not integrated cultural data (e.g., traditional use areas, trails, camping locations) from oral histories and subsistence research into the DEIS's cultural resource analysis.	There are no 14(h)(1) selections within the program area in that ASRC elected not to submit any 14(h)(1) applications to the BIA. The 27 and 5 parcels referred to in the USFWS EIS fall within Doyon region lands, and are not part of the program area. The EIS acknowledges the history, cultural and spiritual connection, and importance of the Coastal Plain to Gwich'in (see Sections 3.4.2, 3.4.3, 3.4.4, 3.4.5, and 3.4.11). Additional documentation of place names in the program area would not change the cultural resource section conclusion; thus, while place names would inform the magnitude of impacts and may be essential at a later stage in the implementation of an oil and gas program, such information is not essential to a reasoned choice among alternatives at the leasing stage (see Appendix Q).

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16.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	21	Cultural Resources	The BLM also needs to consider Canadian Indigenous communities. Any cultural resource analysis for the Program Area is incomplete without taking into account Canadian Indigenous cultural resources. As the Inuvialuit Game Council (IGC), Wildlife Management Advisory Council (North Slope), Wildlife Management Advisory Council (Northwest Territories), and Fisheries Joint Management Committee stated in their scoping comments for this EIS: Many Aklavik Inuvialuit tell stories about travelling, watching the weather, safe havens, and changing conditions along the 200 km of coastline from Herschel Island to Kaktovik. There are also many well-known and documented burial places, cabin sites, and other cultural use sites all along this important traditional travel route. ¹⁵	The EIS has been revised to more fully analyze transboundary impacts, where applicable. This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require an additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

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17.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	22	Cultural Resources	Another significant data gap is the BLM's failure to address submerged cultural resources in the offshore area of the Program Area beyond a single mention in the DEIS. (DEIS, at 3-159). A single, vague mention is inadequate. BLM needs to review, consider, and include the Bureau of Ocean Energy Management's (BOEM) findings and recommendations regarding offshore cultural resources in its 2017-2022 Outer Continental Shelf Oil and Gas Leasing Program Final Programmatic EIS. The BOEM describes the types of submerged cultural resources this way: Submerged cultural resources within the Alaska program areas [Beaufort Sea, Chukchi Sea, Cook Inlet] include shipwrecks that date from early exploration and settlement of the Pacific Arctic region by Europeans as early as the mid-18th century. Submerged pre-contact sites dating between 20,000 and 3,000 years before present (B.P.) also could be present within the Alaska program areas, depending on regional landform variation. ¹⁶	The text has been revised to incorporate information from BOEM's 2017–2022 EIS.

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18.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	23	Cultural Resources	In summarizing the potential for offshore archaeological resources in the Beaufort and Chukchi Seas, BOEM stated: Some areas near barrier islands or areas protected by shorefast ice would exhibit less gouging and have a greater potential for intact archaeological resources . . . [while] . . . the greatest potential for offshore site preservation is in those areas >70 km (43 mi) offshore and in depths >30 m (98 ft) . . . [although] . . . deleterious effects of sea ice on archaeological sites has less of an impact than previously assumed. ¹⁷ The BLM's proposed leasing program has the potential to impact offshore cultural resources and the agency must address these potential impacts because: (1) the Program Area extends offshore where submerged cultural resources may exist; (2) there are numerous barrier islands in the Program Area and offshore areas around them have greater potential for submerged archaeological resources; and (3) the ability of sea ice to destroy submerged archaeological resources has been overestimated.	The text has been revised to incorporate information from BOEM's 2017–2022 EIS.
19.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	24	Cultural Resources	In addition to data gaps in the DEIS's cultural resource impact section, there are gaps in the BLM's list and description of applicable cultural resource legislation and EOs. The DEIS states that there are EOs and legislation beyond the NEPA and Section 106 of the NHPA that are "relevant" (DEIS, at 3-151); which is true. Because these EOs and other legislation are "relevant," the BLM must explain how they are relevant and the efforts the agency is putting forth to address cultural resources under these other EOs and legislation. As the DEIS reads now, the BLM merely lists "relevant" legislation and EOs without explanation. The BLM must correct these errors of omission.	The BLM is required to comply with all applicable laws, regulations, and executive orders when making decisions. NEPA does not require explanation of said compliance with each applicable legal requirement.

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20.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	25	Cultural Resources	For example, the BLM needs to demonstrate in the DEIS how the agency is consulting with tribal governments (including the Native Village of Venetie Tribal Government, Arctic Village Council, and Venetie Village Council) through government-to-government consultation to address Indian Sacred Sites under EO 13007.18 The BLM must also include and explain how it is addressing the Federal Lands Management Policy Act of 1976 (43 U.S.C. §§ 1701-1784), the Religious Freedom Restoration Act (42 U.S.C. 21b), EO 12898 Environmental Justice, and EO 13175 Consultation and Coordination with Indian Tribal Governments in the list of “relevant” cultural resource legislation and EOs.	The BLM is required to comply with all applicable laws, regulations, and executive orders when making decisions. NEPA does not require explanation of said compliance with each applicable legal requirement. Government-to-government consultation is documented in Appendix C.
21.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	26	Cultural Resources	Another glaring deficiency is the BLM's cursory description of how the agency is coordinating the NEPA and the Section 106 processes: The Section 106 process for addressing effects on historic properties is occurring concurrently with the NEPA process and will include the development of a programmatic agreement to address the process for identifying historic properties and resolving potential adverse effects through avoidance, minimization, or mitigation. (DEIS, at 3-157). This is not sufficient. The BLM must describe in the Cultural Resources section what has occurred in the Section 106 process for its undertakings related to the Program Area. As BLM knows, this is because the agency “should ensure that . . . an EIS and record of decision (ROD) includes appropriate scoping, identification of historic properties, assessment of effects upon them, and consultation leading to resolution of any adverse effects.	All statutory obligations have been met, and will continue to be met through the EIS process. The BLM initiated consultation for the Section 106 process on April 23, 2018. The BLM is working with the ACHP, SHPO, USFWS, and consulting parties (which include all interested tribal governments, ANCSA corporations, and local governments) in development of a programmatic agreement for Section 106 compliance.

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22.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	27	Cultural Resources	The CEQ and ACHP provide additional guidance on including information from the Section 106 process in the DEIS: The agency should include any information obtained from the Section 106 consultation in the draft EIS sections on affected environment and impacts, subject to the confidentiality provisions of Section 304 of the NHPA. This ensures that determinations regarding which alternatives to advance for detailed analysis and which alternative is selected as the preferred alternative are made with an appropriate awareness of historic preservation concerns.20 BLM must include a discussion of its Section 106 activities related to the Program Area and how the Section 106 process is influencing the choice of alternatives in the DEIS.	All statutory obligations have been met, and will continue to be met through the EIS process. The BLM initiated consultation for the Section 106 process on April 23, 2018. The BLM is working with the ACHP, SHPO, USFWS, and consulting parties (which include all interested tribal governments, ANCSA corporations, and local governments) in development of a programmatic agreement for Section 106 compliance.
23.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	29	Cultural Resources	The BLM provided better developed cultural contexts in its EISs for Point Thompson, NPR-A, and Greater Mooses Tooth projects; albeit these cultural contexts failed to include Indigenous perspectives. The BLM must revise the DEIS to provide a more comprehensive cultural context that includes Indigenous perspectives. For example, the BLM needs to include Gwich'in oral histories about the Program Area as part of the cultural context because it is incomplete without it.	Traditional knowledge, including oral histories, has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. The BLM has used this information to help inform development of the EIS and ensure a more robust analysis. See Appendix C for details on how consultation and traditional knowledge have been incorporated into the EIS process.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	30	Cultural Resources	Indigenous cultural contexts are equal to Western science perspectives. The BLM should review the use of oral histories throughout the Cultural Resources Affected Environment and Environmental Consequences sections for the U.S. Department of Agriculture's ("USDA") DEIS for the Roca Honda Mine project.²¹ There, the USDA clarifies the importance of including Indigenous oral/ethno histories: ²¹ USDA, Draft Environmental Impact Statement for Roca Honda Mine 296-360 (2013). ²² Id. at 305. Information from ethnohistories can be paired with other sources of information (such as archaeological or archival) to develop a fuller picture of history than would be possible when taken alone. Ethnohistory is another source of information that helps form a context within which cultural resources are understood and given meaning.²² Because the DEIS does not include Indigenous oral histories in the cultural resources section, it presents an incomplete picture of the cultural heritage of the Program Area. BLM must correct this omission.	Traditional knowledge, including oral histories, has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. The BLM has used this information to help inform development of the EIS and ensure a more robust analysis.

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25.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	31	Cultural Resources	In the Previously Documented Sites section of the DEIS, BLM states: Tent ring complexes, consisting of arrangements of stones used to secure skin tents to the ground, often with associated hearths in and outside the ring; these features are found along river corridors on elevated terraces and likely relate to seasonal caribou hunting by coastal people; in some cases, these complexes are near or next to caribou drive lines or fences. (DEIS, at 3-153) (emphasis added). It is incorrect to assume that tent ring complexes in the Program Area are only affiliated with "coastal people." It is likely many of these tent ring complexes are a result of ancestral Gwich'in people camping while traveling to hunt, trade, and war. Traveling from winter territory in the Brooks Range to the spring and summer range of the Coastal Plain would take longer than a day and would necessitate camping. ²³	Text has been revised to remove the phrase "coastal people."
26.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	32	Cultural Resources	BLM needs to also make note in the Locations of Previously Documented Sites section of the DEIS that a vast majority of the archaeological sites documented in the Program Area were documented prior to use of global positioning systems (GPS). These sites will therefore need to be relocated prior to any oil and gas exploration activities, including seismic work. Establishing a 500-foot safety buffer around sites based on their current location in the state's Alaska Heritage Resources Survey (AHRS) database will not be an effective mitigation strategy because the actual locations of these sites could be off by up to twenty miles, like some other North Slope sites in the AHRS.	Text has been revised to identify potential site location inaccuracies.

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27.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	33	Cultural Resources	BLM limits its assessment of the impacts to previously documented sites based on the idea that these sites are discrete entities and not part of a larger whole. This misguided concept has resulted in an incomplete analysis because it is likely many of the sites are contributing features to archaeological and historic districts and cultural landscapes. The BLM must correct its faulty reasoning in this DEIS and analyze the previously documented sites as contributing features to districts and landscapes.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require an additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
28.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	34	Cultural Resources	It is apparent from the DEIS's Cultural Resources section that the BLM is downplaying the significance of these archaeological sites and other cultural resources to understanding the cultural heritage of the Arctic. The BLM should review the USFWS's findings on the cultural importance of these resources in the first EIS for oil and gas exploration in the Program Area: Former surveys focused on very limited geographic areas and, generally, selectively sampled only some of the locales where archeologists expected to find sites, thereby skipping areas assumed to have low site frequencies. This has left large gaps in the data base regarding settlement system and changing land use patterns and the basic chronology of the cultural occupation sequences. Many questions remain unanswered regarding the cultural processes that produced the sequences of human occupations (now represented only in archeological sites), environmental influences on these processes, and the social behavior that resulted from and produced these processes. Even though the previous investigations have been limited in scope and intensity, they have identified over 50 prehistoric and historic sites representing at least 6,000 years of human occupation within ANWR.	The EIS presents an objective discussion of the known cultural resources available to the BLM. A lack of refined cultural chronologies, settlement patterns, social processes, and land use patterns through time and space are not unique to the program area. The BLM's Draft EIS refers the reader to the USFWS findings. This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require an additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

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28. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Research in adjacent areas in north Alaska and Canada clearly indicate that the ANWR study area is within one of the two most probable northern entry routes for the first human inhabitants of the Western Hemisphere from the mainland of Asia. Thus, it can be expected that sites representing at least 12,000 years of human occupation, from Paleoindian times to the present, may be found within the coastal plain study area of ANWR. These sites, both early and recent, could yield data of great scientific and cultural value because so little is known of the sequence of human occupations and culturally defined land use patterns for this region. ²⁴	(see above)
29.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	35	Cultural Resources	It is of fundamental importance that the DEIS addresses impacts to lizhik Gwats'an Gwandaii Goodlit. Indeed, the DEIS acknowledges that: In summary, given the information currently available and the undetermined location and nature of development in the program area, potential impacts on traditional belief systems/religious practices and other ethnographic cultural resources, such as TCPs and cultural landscapes, particularly for the Gwich'in people, would be adverse, regional, and long term. (DEIS, at 3-157). It is unclear why the DEIS first mentions lizhik Gwats'an Gwandaii Goodlit in the Direct and Indirect Impacts subsection of the Cultural Resource section. (DEIS, at 3-156). As the DEIS acknowledges, lizhik Gwats'an Gwandaii Goodlit is a known cultural resource: "The Gwich'in people . . . hold the program area as sacred ground." (DEIS, at 3-156). This sentence provides the basics for what constitutes a cultural resource: (1) its location (the Program Area); and (2) its importance (it is sacred ground). The name should also clue the BLM in as to why lizhik Gwats'an Gwandaii Goodlit is a cultural resource.	Text has been modified to include specific reference to lizhik Gwats'an Gwandaii Goodlit in the affected environment.

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30.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	36	Cultural Resources	The BLM has examined the NEPA scoping comments and conducted background research. Regardless of the limited analysis in the DEIS, the agency has enough information to know that a TCP (or cultural landscape) encompasses the Program Area. The BLM must address lizhik Gwats'an Gwandaii Goodlit in the Ethnographic Resources subsection of the DEIS as a known cultural resource and properly assess impacts to the lizhik Gwats'an Gwandaii Goodlit.	The EIS focuses on and provides detailed discussion of the characteristics of, and impacts on, the Coastal Plain project area, and thereby to the lizhik Gwats'an Gwandaii Goodlit landscape because the Coastal Plain project area comprises all aspects of it. Section 3.4.2 discusses the importance of the lizhik Gwats'an Gwandaii Goodlit landscape to the Gwich'in people. Mitigation measures have been developed in consideration of information that has been shared regarding this area, and in collaboration with the cooperating agencies. Consideration of a TCP may occur for Section 106 of NHPA compliance, in consideration of site-specific projects and subsequent NEPA analysis.
31.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	40	Cultural Resources	These stories reveal that lizhik Gwats'an Gwandaii Goodlit is a cultural landscape of traditional religious and cultural significance to the Gwich'in of Arctic Village and Venetie. The DEIS fails to address how the BLM is taking into account effects to lizhik Gwats'an Gwandaii Goodlit in the Section 106 process.	In developing the alternatives, the BLM considered means to protect all key resources, including cultural resources. A primary component of alternatives development was providing for protection of the area the Gwich'in identify as lizhik Gwats'an Gwandaii Goodlit through protection of the caribou calving and post-calving areas. Additional mitigation measures that further avoid, minimize, or mitigate adverse effects on historic properties may be incorporated during site-specific project NEPA analysis.

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32.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	42	Cultural Resources	The DEIS attempts to downplay the impacts to Gwich'in cultural resources by describing the cultural importance of Iizhik Gwats'an Gwandaii Goodlit only in terms of subsistence resources. For example, the DEIS states that "the presence of development in the Program Area would constitute a cultural impact on the Gwich'in people. This is because they believe that development in the Program Area would harm the caribou and other migratory resources (such as waterfowl) that migrate to the Coastal Plain to give birth." (DEIS, at 3-156). The impacts of development within the Coastal Plain are more than impacts to caribou-it is an assault on the Gwich'in and their sense of self. Nonetheless, the Coastal Plain is the birthing grounds of many resources. Moreover, these impacts are associated with a greater view of land and environment, not just a single resource. Contemporary expressions of sacredness have been shown through ceremonies held by the Gwich'in about and on the Coastal Plain.	Information provided from the comment has been incorporated to include other aspects of the environment that contribute to the importance of Iizhik Gwats'an Gwandaii Goodlit.
33.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	43	Cultural Resources	The DEIS also states that the Gwich'in people have identified the Program Area and adjacent areas of the Coastal Plain as a cultural landscape. (DEIS, at 3-157). The Program Area is not precluded from being a cultural landscape simply because it is also part of a TCP. Indeed, the DEIS defines landscapes as: The sum total of the characteristics that distinguish a certain area on the earth's surface from other areas; these characteristics are a result not only of natural forces, but also of human occupancy and use of the land. An area composed of interacting and interconnected patterns of habitats (ecosystems), which are repeated because of geology, landforms, soils, climate, biota, and human influences throughout the area. (DEIS, at	The EIS focuses on and provides detailed discussion of the characteristics of, and impacts on, the Coastal Plain project area, and thereby to the Iizhik Gwats'an Gwandaii Goodlit landscape because the Coastal Plain project area comprises all aspects of it. Section 3.4.2 discusses the importance of the Iizhik Gwats'an Gwandaii Goodlit landscape to the Gwich'in. Mitigation measures have been developed in consideration of information that has been shared regarding this area, and in collaboration with the cooperating agencies. Consideration of a TCP may occur for Section 106 of NHPA compliance, in consideration of

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33. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Glossary-10). While this definition touches on the cultural aspect of a landscape, the National Park Service (NPS) provides a clearer definition of cultural landscapes: a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values. There are four kinds of non-mutually exclusive types of cultural landscapes: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes. ³¹ 31 NPS, Management Policies 2006 157 (2006); see also Charles A. Birnbaum, Preservation Briefs: Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes 1 (1994). 32 NPS, Management Policies 2006, supra at 157. A review of the definitions for the NPS's four types of cultural landscapes indicates that the Program Area is part of an "ethnographic landscape," which the NPS defines as: an area containing a variety of natural and cultural resources that traditionally associated people define as heritage resources. The area may include plant and animal communities, structures, and geographic features, each with their own special local names. ³² The BLM must provide a thorough discussion on the landscape characteristics and the potential impacts to Iizhik Gwats'an Gwandaii Goodlit.	site-specific projects and subsequent NEPA analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	45	Cultural Resources	The BLM must review and use the landscape characteristics the NPS has listed in its Cultural Landscapes Inventory Professional Procedures Guide (Table 1) to assess and document the Iizhik Gwats'an Gwandaii Goodlit cultural landscape.	The EIS focuses on and provides detailed discussion of the characteristics of, and impacts on, the Coastal Plain project area, and thereby to the Iizhik Gwats'an Gwandaii Goodlit landscape because the Coastal Plain project area comprises all aspects of it. Section 3.4.2 discusses the importance of the Iizhik Gwats'an Gwandaii Goodlit landscape to the Gwich'in. Mitigation measures have been developed in consideration of information that has been shared regarding this area, and in collaboration with the cooperating agencies. Consideration of a TCP may occur for Section 106 of NHPA compliance, in consideration of site-specific projects and subsequent NEPA analysis.
35.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	51	Cultural Resources	Cultural Traditions. Gwich'in cultural practices have influenced the development of the Iizhik Gwats'an Gwandaii Goodlit in terms of land use, patterns of land division, stylistic preferences, and the use of materials. These include: (1) the cultural identity of the Gwich'in people as the "Caribou People," which is intertwined with the PCH calving areas; (2) ancestral and historical trade with Iñupiat at places along the coast; (3) occasional battles and peaceful conflict resolution with Iñupiat; (4) ancestral and historical camping, hunting, and traveling; and (5) avoidance of the area in modern times to reduce the chances of disrupting caribou calving and waterfowl nesting to ensure future successful harvesting and preservation of the Gwich'in culture.	Applicable data have been included in the EIS, as necessary.

S. Public Comments and BLM Responses (Cultural Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	52	Cultural Resources	Circulation. Ancestral Gwich'in people followed rivers as travel (i.e., circulation) routes that facilitate travel within the Iizhik Gwats'an Gwandaii Goodlit and connect the landscape with the larger region. Some of these travel routes were used for trade. (Figure 3).	Applicable data have been included in the EIS, as necessary.
37.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	54	Cultural Resources	Archaeological Sites. The DEIS states that there are eighty-nine AHRs sites and thirty-four Traditional Land Use Inventory ("TLUI") sites recorded in the Program Area, including sites of both prehistoric and historic origin of which many are archaeological sites. Ancestors of the Gwich'in people and Iñupiat created these sites as a result of their shared use of the Program Area. (DEIS, at 3-153). A review of the AHRs shows that many of these sites are along rivers ancestral Gwich'in people followed to access the Program Area. The ancestral Gwich'in derived sites contribute to the significance of the Iizhik Gwats'an Gwandaii Goodlit.	Applicable data have been included in the EIS, as necessary.
38.	Sayers	Tuzrolyuk	Voice of the Arctic Iñupiat	83318	5	Cultural Resources	Section 3.4.2 - Cultural Resources 1. The BLM should review this entire section. VOICE is concerned that this section has little mention of the Kaktovikmiut or the Iñupiat, who have occupied this land since time immemorial. This whole section is focused on the Gwich'in who live 150 plus miles from the Coastal Plain. This is a biased and subjective analysis that should be deleted from the EIS. The BLM should make sure that their analysis is centered on Kaktovik, the impacted community	The text has been revised to include additional discussion of the TLUI and emphasis on Kaktovikmiut occupation of the area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Elizabeth	Ballard	—	90951	35	Cultural Resources	The DEIS does not acknowledge impacts to the MPA's cultural resources. One of the main purposes of an MPA is "the ecologically and economically sustainable use of the marine environment for future generations," ⁵⁹ including the sustainable harvest and consumption of fish and other marine resources. But the DEIS completely lacks any reference to the importance of protecting the MPA for cultural reasons. The agency must explain that the MPA is a protected area that is intended to conserve marine resources for both natural and cultural reasons, and explain how fossil fuel development in the 1002 Area will impact the cultural resources contained within the MPA.	The text has been revised to incorporate information from BOEM's 2017–2022 EIS, which addresses the potential for cultural resources in nearshore areas of the program area.
40.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	48	Cultural Resources	Because only limited areas of the Arctic Refuge have been studied for cultural resources, the vast majority of lands may contain cultural resources that are unknown. The potential to discover unknown sites is high in the Arctic Refuge and BLM must conduct a survey prior to issuing any leases. As part of these cultural resource inventories, BLM should consider whether locations are eligible for listing in the National Register of Historic Places based on their significance to the Gwich'in people.	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.
41.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	49	Cultural Resources	The EIS is deficient as it presents an incomplete picture of the Coastal Plain's prehistoric and historic sites; the agency cannot sufficiently protect the unknown. Information currently available is outdated, insufficient, and incomplete. A full, comprehensive study of the Coastal Plain's cultural resources, including specific consideration archeological resources and historic resources is required to make informed decisions and to comply with the NHPA.	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement. The EIS presents the best available summary of known sites and resources.

S. Public Comments and BLM Responses (Cultural Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Tim	Whitehouse	PEER	95601	30	Cultural Resources	What studies/surveys need to be conducted to fill those information gaps? Cultural resource investigations will be necessary to sufficiently identify cultural resource sites, determine the significance of such sites, to evaluate effects to sites determined eligible under National Register of Historic Places criteria, and to determine avoidance, minimization and mitigation standards for eligible sites that would be adversely affected by oil and gas activities. USFWS should commit one full-time GS-0193-11 archeologist to oversee agency cultural resource investigation permitting and Section 106 responsibilities during the duration of oil and gas exploration and extraction operations development.	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.
43.	Withheld	Withheld	—	97253	7	Cultural Resources	BLM acknowledges, on p. 3-157 to 3-159 of the EIS, that effects to cultural resources under most of the alternatives would be adverse, long term, and in some cases, regional in scope. Instead of addressing this serious concern fully through consultations and proposed mitigation actions in the EIS, BLM essentially punts the issue for later consideration in future consultation processes. This is unacceptable.	Government-to-government and Section 106 consultation (including development of a programmatic agreement) are being done to address concerns. Mitigation is also included in the EIS to address cultural concerns.
44.	Chamie	Brown	University of Florida	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act. ²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human occupation found in images like those from the study can also be helpful to identify sacred sites ²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20 December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oil-drilling-proposal.html (last visited February 23, 2019). whalebone houses. ²⁵ To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Daniel	Suman	—	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act.²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human occupation found in images like those from the study can also be helpful to identify sacred sites²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oildrilling-proposal.html (last visited February 23, 2019). whalebone houses. ^{2s} To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)
46.	Caroline	Jasperse	—	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act. ²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	occupation found in images like those from the study can also be helpful to identify sacred sites ²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20 December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oildrilling-proposal.html (last visited February 23, 2019). whalebone houses. ²⁵ To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)
47.	Jacob	Hensch	—	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act. ²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human occupation found in images like those from the study can also be helpful to identify sacred sites ²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20 December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oil-drilling-proposal.html (last visited February 23, 2019). whalebone houses. ²⁵ To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)
48.	Kristen	Ranges	—	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act. ²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human occupation found in images like those from the study can also be helpful to identify sacred sites ²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20 December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oil-drilling-proposal.html (last visited February 23, 2019). whalebone houses. ²⁵ To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)
49.	Madeline	Miller	—	98022	5	Cultural Resources	The remains of sites, structures, and objects in the Arctic Refuge Coastal Plain are subject to damages from post-lease activities associated with the Coastal Plain Oil and Gas Leasing Program. Large areas of land included in the program have not been surveyed, making it likely that sacred sites and other structures will be disturbed or destroyed completely during development. Traditional harvest sites and dwellings built by indigenous	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	peoples are also subject to disturbances. A strong possibility exists that unsurveyed areas of land in the coastal region may also contain important resources. The National Environmental Policy Act and section 106 of the National Historic Preservation Act should be used to assess the Arctic Refuge Coastal Plain's cultural resources. Guidelines for historic properties are also included in the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act.²³ An area-wide survey, similar to the one conducted by Edwin Hall in 1982, should be conducted in the entire Coastal Plain area using state-of-the-art technologies. The study produced aerial-view images, and utilized them to identify traits of prehistoric encampments, and locate archaeological materials. The survey lasted 20 days and . minimized pedestrian interference, identifying artifacts of stone, bone, glass, charcoal, and china. Evidence of human occupation found in images like those from the study can also be helpful to identify sacred sites²⁴ Previously documented sites throughout the Arctic Refuge include tent ring complexes, sod houses and cabins, cemeteries, and 22 Fountain. H. 2018. Interior Dept. Moves Toward Selling Oil Leases in Arctic Refuge. The New York Times 20 December 2018. Retrieved from: https://www.nytimes.com/2018/12/20/climate/alaska-anwr-oil-drilling-proposal.html (last visited February 23, 2019). whalebone houses.²⁵ To identify and document cultural resource sites, time should be allotted for the area to be thoroughly surveyed using a similar technique.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Tracy	Rempel	—	98181	1	Cultural Resources	The Bureau of Land Management's Draft Environmental Impact Statement (DEIS) fails to address the environmental and cultural damage that could be caused by oil drilling in the Arctic Refuge.	The EIS addresses the impact on cultural resources in Section 3.4.2.
51.	Brook	Brisson	Trustees for Alaska	98270	83	Cultural Resources	BLM cannot engage in cultural resource protection without surveys and a baseline understanding of the resources. The EIS is deficient as it presents an incomplete picture of the Coastal Plain's prehistoric and historic sites, and cannot sufficiently protect the unknown. Information currently available is outdated, insufficient, and incomplete. A full, comprehensive study of the Coastal Plain's cultural resources, including specific consideration of archeological resources and historic resources is required, not only to make informed decisions, but it is required by NHPA.1729	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.
52.	Brook	Brisson	Trustees for Alaska	98270	84	Cultural Resources	BLM must document the broader cultural ties to the coastal plain for the Iñupiat and Gwich'in. Ethnographic resources also require protections, including ethnographic landscapes, traditional cultural properties, Native American sacred sites, and intangible cultural resources (e.g. oral traditions, indigenous knowledge, and traditional skills).1730	The EIS documents the Iñupiat and Gwich'in cultural ties to the Coastal Plain. The process for avoiding, minimizing, or mitigating adverse effects on ethnographic resources associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement and associated consultation.
53.	Brook	Brisson	Trustees for Alaska	98270	85	Cultural Resources	the EIS states that [a]ny potential impacts on [Iñupiat Gwats'an Gwandaii Goodlit, "The Sacred Place Where Life Begins"] would constitute a cultural effect" on the Gwich'in people.1732 Deference should be given to traditional knowledge, which "is built on millennia of residence in the region."1733 The lack of research must be remedied before BLM undergoes any disruption or oil and gas activities that could potentially harm the Coastal Plain, a significant ethnographic cultural resource.	The BLM is actively compiling traditional knowledge related to the Iñupiat Gwats'an Gwandaii Goodlit, "The Sacred Place Where Life Begins," and Inupiat ethnographic resources associated with the Coastal Plain program area. This information is being developed as part of the Section 106 programmatic agreement and associated consultation.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Brook	Brisson	Trustees for Alaska	98270	86	Cultural Resources	BLM identifies that the Gwich'in people in Arctic Village and Venetie requested consultation, specifically on ethnographic knowledge. ¹⁷³⁴ The NHPA requires BLM to meaningfully comply, not only with regard to the communities of Arctic Village and Venetie's requests, but it must pursue consultation for all Gwich'in communities along the historic migration path of the Porcupine Caribou Herd and for Iñupiat communities as well. ¹⁷³⁵	The BLM has consulted with and continues to consult with potentially affected communities as a result of the Coastal Plain oil and gas leasing program though government-to-government consultation and the Section 106 consultation process.
55.	Brook	Brisson	Trustees for Alaska	98270	89	Cultural Resources	Currently, in its rush to hurry forward this EIS, BLM has not completed "surveys and research to identify and document potential sacred sites, TCPs, ethnographic landscapes, or intangible resources have not been completed to date in the program area." ¹⁷³⁸ Any archeological resources discovered through the required studies are also protected by the ARPA as an "irreplaceable part of the Nation's heritage." ¹⁷³⁹ BLM must perform obtain the necessary information and conduct the required surveys to accurately analyze the impacts of an oil and gas program on cultural resources. By not completing these surveys, BLM fails to comply with NEPA and Section 106 NHPA, and cannot adequately consider the impacts of the proposed alternatives it has set forth in the EIS. ¹⁷⁴⁰	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement.
56.	Kevin	Fisher	North Slope Borough	98272	1	Cultural Resources	A number of important references appear not to have been consulted. The term "historic" is used to refer to sites that post-date Euro-American contact. It would be preferable to use the term "post-contact" for such sites. Simply because history is not written does not mean it is not history.	It is unclear what references are missing. The text has been revised to use the term "post-contact."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Kevin	Fisher	North Slope Borough	98272	2	Cultural Resources	Pg. 3-153, para. 1: The bullet list is an extensive verbatim quote from the referenced USFWS report. However, it leaves out graves, which certainly do exist in the program area, not necessarily in conjunction with any residential site.	The text has been revised to include graves.
58.	Kevin	Fisher	North Slope Borough	98272	4	Cultural Resources	Pg. 3-153, para. 2: The tables referred to here (in Appendix L) need to be updated prior to finalizing the EIS. There are a number of sites with new or updated information collected at recent NSB TLUI workshops which does not appear to be correct in the AHRS as of 3/2019. The TLUI table (Appendix L, Table L-2) suffers from what appears to be issues with conversion from Inu fonts to whatever is used in the table, resulting in multiple misspellings. This can be remedied by getting a PDF of the output from a source with Inu fonts installed, and manually entering the correct spellings. If Inu fonts are not installed and used, a digital transfer will not work correctly. There are no Bs or Fs in Iñupiaq.	Updated TLUI data and proper Inupiaq spellings have been incorporated into the Final EIS.
59.	Kevin	Fisher	North Slope Borough	98272	5	Cultural Resources	Pg. 3-154, para. 1: Although the coastal erosion in the program area is quite rapid, it is not the case that all precontact sites near the coast have eroded. There are areas that are protected or even accreting. If the area has not been subject to systematic survey, the possible existence of intact eligible cultural resources should not be ruled out.	The text has been revised to reference variable coastal processes and differential effects on coastal archaeological sites.
60.	Kevin	Fisher	North Slope Borough	98272	6	Cultural Resources	Pg. 3-155, para. 2: Additional information has been collected at NSB TLUI workshops, but it was clear at the time that there was a great deal more information out there unrecorded. It should either be made much more clear that much work remains to be done (since it often doesn't seem to be clear to readers of final EIS documents) or additional efforts need to be made at this point.	The text has been revised to acknowledge data gaps and ongoing NSB TLUI workshops.

S.3.9 Cumulative Impacts

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Prisks	Wettstein	Form Letter 1 - Email	44	1	Cumulative Impacts	The Draft Environmental Impact Statement fails to comprehensively analyze the trans-boundary impacts of oil and gas leasing in the Arctic National Wildlife Refuge. The U.S. Government must fully address the consequences of drilling on the Porcupine caribou herd, and impacts to the livelihood of the Gwich'in who rely on the herd.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
2.	Donald	Walker	—	68	17	Cumulative Impacts	While the Tax Act authorized an oil and gas leasing program in the 1002 Area, Congress passed the tax reform bill with assurances that the environmental quality of this region will be maintained. As discussed below, the terrain and vegetation of this region are highly vulnerable to the impacts of 3D-seismic surveys, the cumulative impacts of development that would follow, as well as the impacts of climate change. A more thorough evaluation of potential cumulative effects of 3D seismic surveys is needed to understand the full potential consequences of moving forward with seismic.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done absent a lease (a lease is not required). Even if areas are not available for lease, companies may conduct seismic exploration there. Separate NEPA analyses would be completed for all seismic exploration applications, which would analyze the site-specific impacts. Additionally, seismic exploration projects are also considered in the cumulative analysis (see Appendix F).
3.	F	Chapin	—	29337	2	Cumulative Impacts	The EIS does not evaluate the extent of cumulative landscape impacts beyond the roads and pads. At Prudhoe Bay, these extensive cumulative impacts have altered a large proportion of the Prudhoe Bay landscape, including creation of new drainage ways and a change in the channel of the Sagavanirktok River. Given that the coastal plain is a relatively narrow band in the 1002 area, cumulative extensive impacts might have substantial impacts on the people and animals that depend on this area. There has been extensive research on cumulative impacts in the Prudhoe Bay region (including a review by the National Academy of Sciences—NRC 2003) that is not adequately considered in this EIS.	Appendix F describes the cumulative analysis area for each resource, all of which extend beyond just the roads and pads.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Malkolm	Boothroyd	—	54092	2	Cumulative Impacts	The DEIS utterly fails in its assessment of cumulative impacts. Cumulative impacts are not defined by species: for instance the Porcupine caribou herd is lumped in with all other terrestrial mammals and all bird species are amalgamated. The terrestrial mammal cumulative impact section is a mere five sentences long. According to the CEQ, cumulative effects are “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR ~ 1508.7). Cumulative effects sections in the DEIS are limited to a cursory identification of some factors which may constitute cumulative effects. Nowhere does the DEIS provide quantitative assessments of how cumulative effects may impact species, ecosystems, communities or the climate.	At this programmatic scale, quantitative analysis is not appropriate. It is unknown where development might occur and at what levels. This analysis can only disclose potential impacts. Site-specific analysis lends itself to quantitative forecasts.
5.	Withheld	Withheld	—	55252	8	Cumulative Impacts	the DEIS does not adequately include an analysis of all foreseeable impacts from climate change on the Coastal Plain of the Arctic National Wildlife Refuge, and potential development thereon, including: tundra fires, more intense storms, lightening, greater evaporation from lakes, and more erratic weather. These need to be included and analyzed.	Resource trends resulting from a changing climate are discussed in the affected environment.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	—	56769	3	Cumulative Impacts	Combustion of fossil fuels from any hydrocarbons extracted will exacerbate global climate change, will warm the atmosphere and will thus warm oceans even further, leading to sea level rise from simple expansion of oceanic waters as well as increased input of melting ice structures such as ice sheets and glaciers. Already native Alaskan seaside communities have been affected by this process and increased erosion and invasion by the ocean onto the land will occur in the near future. This DEIS proposal has made no serious estimate of the human, cultural, and economic losses associated with this process.	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F.
7.	Withheld	Withheld	—	57064	1	Cumulative Impacts	Cumulative effects must be fully considered, negative impacts both culturally and for impacted species of caribou, fishery, and multitudes of migratory birds. Must examine similar impacts at Prudoe Bay and other areas where drilling has occurred.	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	—	59376	22	Cumulative Impacts	Cumulative Effects Analysis & Cumulative Effects Project List. (1) Cumulative effects analysis is general, cursory, and not project specific. First, determine the list of relevant actions (means other state, federal, private projects) that in combination with the proposed action could result in combined effects breaching a level of significance. Table F-1 just speaks to activities in a general manner, not specific projects. After developing your project list, then focus the CEA on the combinatory effect of certain actions with the proposed action. Do this rather than what appears in the Draft EIS (see e.g., climate change analysis at p. 3-9). The CEQ does, however, allow for some aggregation of past actions since this aspect of an analysis is sometimes problematic as past actions may also result in the baseline conditions. (2) Statements of “no cumulative impacts” does not make sense since no action is continuation of past/ present effects - I assume things will still go on affecting the environment even under the no action. A more plausible statement would be - there is not potentially significant cumulative effects warranting further analysis, although effects would continue to accrue from specific past/present actions.	Cumulative impact analyses have been revised as suggested where applicable. This Leasing EIS will not result in the authorization of any on-the-ground activities, and analysis is based on a hypothetical development scenario. This is because there are no specific project proposals to analyze. The cumulative analysis anticipates development to occur as described in the hypothetical development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Withheld	Withheld	—	68965	24	Cumulative Impacts	3. Inadequate Cumulative Effects Analyses. Appendix F, pages F-4 to F-11 lays-out the expected structure and content of cumulative effects analyses in the draft EIS. The material presented in Appendix F provides a sound framework for cumulative effects analysis. In practice, however, cumulative effects analyses for specific resources presented in each section of the draft EIS generally do not conform to this framework and generally do not provide thoughtful and thorough analyses of the potential cumulative effects associated with other projects and ongoing and planned activities listed in Appendix F (pgs. F-5 to F-11). For example, why don't any of the cumulative effects analyses for any of the resources considered include analysis of the liquid natural gas transport pipeline scheduled to come on-line in 2025, which is described in Appendix B (pg. B-17) and Appendix F (pg. F-9)? Appendix B is titled "Reasonably Foreseeable Development Scenario for Oil and Gas Resources in the Public Law 115-97 Coastal Plain, Alaska," clearly indicating that this liquid natural gas pipeline is a reasonably foreseeable action. The description on pages B-17 and B-18 indicates that if natural gas is found in the program area, it is likely to be transported via this proposed pipeline, establishing a clear connection between this pipeline and the Coastal Plain oil and gas program. This is just one of many examples of profound deficiencies in cumulative effects analyses in the draft. Please revise cumulative effects analyses throughout the draft EIS to conform to the structure and content presented in Appendix F.	Cumulative impact analyses have been revised as suggested where applicable.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	The Wildlife Society - Alaska Chapter	72005	7	Cumulative Impacts	The DEIS provides only a cursory analysis of individual industrial and climate impacts and does not explicitly assess how these impacts may be additive and interactive across the Arctic landscape and beyond. For example, there is an inadequate cumulative effects analysis for caribou and polar bear populations that use the coastal plain of the Refuge. Polar bears—listed as “threatened” under the Endangered Species Act—are already struggling with deteriorating sea ice and increasingly are forced to den on land on the eastern Beaufort Sea coast, including the coastal plain of the Arctic Refuge. In fact, three-fourths of the Refuge coastal plain is designated as critical habitat for polar bears, which are highly vulnerable to disturbance due to oil and gas activities	Cumulative impact analyses have been revised as suggested where applicable.
11.	Richard	Edwards	—	74281	44	Cumulative Impacts	According to Appendix B (page B-12), during exploration, over 900 square miles of the Coastal Plain would be subject to seismic testing with equipment access using roads spaced 320-1,320 feet apart. What is the cumulative impact of the resulting network of compacted surfaces?	Impacts as a result of seismic exploration have been revised in the EIS as appropriate. Site-specific NEPA analyses would be done for any proposed seismic explorations. Additionally, seismic exploration projects are also considered in the cumulative analysis (see Appendix F). Individual resource sections, as applicable, discuss potential impacts (direct/indirect/cumulative) related to soil compaction.
12.	Rosa	Brown	Vuntut Gwitchin Government	74326	18	Cumulative Impacts	Yet, the Draft EIS only addresses climate change impacts on the affected environment (i.e. current conditions) and fails to address cumulative effects of climate change and oil and gas on cultural resources, including on unknown traditional land use sites/archeological sites in the Coastal Plain and the broader region of cultural landscapes significant to the Vuntut Gwich'in relationship with the Porcupine caribou herd. (Draft EIS Vol. I 3-159).	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Rosa	Brown	Vuntut Gwitchin Government	74326	23	Cumulative Impacts	Cumulative Impacts: The draft EIS fails to address how oil and gas activities on the Coastal Plain will cumulatively impact the Vuntut Gwich'in who have already weathered incredible waves of change in only a few generations, and are facing more significant social and economic changes with youth living in two worlds, and climate change impacts to the weather, land, water and wildlife. The draft EIS fails to describe the negative impacts the threat of oil and gas development in the Coastal Plain has on the Gwich'in in the analysis for Alternative A, No Action. The statement "Gwich'in sociocultural systems would likely continue to evolve as a result of existing forces of change..." (Draft EIS Vol. 1 p. 3-187) is vague, and fails to describe changes that could result from accelerating climate change. The National Research Council's 2003 report, Cumulative environmental effects of oil and gas activities on Alaska's North Slope, found there had already been major cumulative effect across the Gwich'in Nation as a result of the debate over oil and gas development in the Refuge Coastal Plain. Proposals to explore and develop oil resources in the Arctic National Wildlife Refuge have resulted in perceived risks to Gwich'in culture in Alaska and the Yukon Territory that are widespread, intense, and themselves are accumulating effects. The Gwich'in have a centuries-old nutritional and cultural relationship with the Porcupine Caribou Herd and oppose new onshore petroleum development that they believe threatens the caribou.³² The National Research Council also documented major impacts to the landscape and Indigenous Peoples that are relevant to our concerns regarding the Porcupine caribou calving grounds. Many activities associated with petroleum development have changed	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F. Further, the purpose of the cumulative analysis is to disclose the additive effects of this potential action with other past, present, and reasonably foreseeable actions, including climate change. This EIS does not analyze the direct impacts of climate change alone.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the North Slope landscape in ways that have had aesthetic, cultural, and spiritual consequences that accumulate. The consequences have increased along with the area of tundra affected by development and they will persist as long as the landscape remains altered... Human-health effects, including physical, psychological, cultural, spiritual, and social, have not been adequately addressed or studied. ³³ The draft EIS failed to identify data gaps or to analyze past, present and potential cumulative effects of oil and gas activity on the Porcupine caribou herd and its habitats. There is no analysis of past, present or future impacts on the herd's size, migrations, range, habitat quality, productivity or energetics. ³² NRC 2003 p. 148. ³³ NRC 2003 p. 148.	(see above)
14.	Philip	Wight	—	74333	2	Cumulative Impacts	Most critically, the DEIS neglects any mentions of tankers in Prince William Sound, the Gulf of Alaska, or the West Coast of the United States. Moving oil by tanker is the only way to export ANS crude once it travels through TAPS to Valdez. Between 1977 and 2019, over 14 million gallons of crude were spilled in tanker accidents from Prince William Sound (namely the Exxon Valdez and other spills) to the Puget Sound, to Southern California and Panama. The DEIS makes no mention of these "downstream" ecological effects, even though they are fundamentally linked to TAPS and drilling on the Coastal Plain. This is a major omission that obscures the environmental impact of drilling in the Arctic Refuge. How would drilling on the Coastal Plain effect the frequency and destination of TAPS tanker trips? How would this movement impact the coastal ecosystems of Prince William Sound and regular TAPS tanker destinations?	The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario. A discussion of tankers was added to the Final EIS.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Renae	Smith	Counsel for Environmental Protection	74336	35	Cumulative Impacts	the projects identified by BLM in the DEIS exclude consideration of important offshore oil and gas activity in the Chukchi and Beaufort Seas, including the Bureau of Ocean Energy Management's (BOEM) plan for a 2019 lease sale in the Beaufort Sea. 190 This project is reasonably foreseeable and should be considered in the cumulative impacts analysis. 191	This action has been included in the list of reasonably foreseeable future actions in Appendix F.
16.	Withheld	Withheld	—	75145	13	Cumulative Impacts	The DEIS failed to consider proposed seismic surveys. ?SAExploration LLC plans to conduct seismic exploration surveys on the Coastal Plain during the winters of 2019 and 2020, but the DEIS fails to analyze the impacts of their proposed seismic exploration. The scope of the DEIS is too limited and did not consider the full range of oil and gas activities. BLM is required to consider all of the environmental impacts of the proposed oil and gas program	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analyses would be done for any proposed seismic explorations. Additionally, seismic exploration projects are also considered in the cumulative analysis (see Appendix F).
17.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	16	Cumulative Impacts	decreased algal production which negatively impacts a wide variety of species up the foodchain. ³² Drier conditions will also affect migratory birds dependent on wetlands. ³³ These stressors are additional to the negative impacts of potential oil and gas development on species in ANWR. ³⁴ While BLM's analysis makes reference to some of the climate impacts on species and habitats in different sections of the DEIS, it should more fully analyze how the combination of climate impacts and development may cumulatively impact species and habitat.	Sections have been revised as appropriate.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	16	Cumulative Impacts	The cumulative effects of oil and gas activities on species and their habitats in conjunction with climate change impacts should also be considered as part of environmental review. For example, declining sea ice will directly and negatively impacts polar bears and walrus and also causes	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F. Further, the purpose of the cumulative analysis is to disclose the additive effects of this potential action with other past, present, and reasonably foreseeable actions, including climate change. This EIS does not analyze the direct impacts of climate change alone. Because current management would not authorize any oil and gas leasing in the Coastal Plain, there are no additive effects of an oil and gas program with other ongoing actions, including climate change.
19.	DJ	Schubert	Animal Welfare Institute	75588	12	Cumulative Impacts	BLM's conclusory treatment of the cumulative impacts of greenhouse gas emissions fails to meet the hard look requirement under NEPA. See <i>Morris v. U.S. Nuclear Reg. Comm'n</i> , 598 F.3d 677, 681 (10th Cir. 2010)	The BLM considered greenhouse gas emissions and climate change in its cumulative effects analysis.
20.	Chandra	Turner	Inuvialuit Game Council	75902	29	Cumulative Impacts	No Canadian plans or measures were referred to in the DEIS and thus impacts to present and future terrestrial and marine conservation measures in Canada were not considered. See Appendix A1 from our scoping submission for references.	Discussions of transboundary impacts have been added to resource sections in Chapter 3, where applicable.
21.	Chandra	Turner	Inuvialuit Game Council	75902	30	Cumulative Impacts	Cumulative effects (especially as they pertain to ongoing climate change) are not adequately considered or analyzed throughout the DEIS. At best, the species-specific sections summarize the possible effects from the proposed project and other outside activities and make qualitative statements about cumulative impacts. No rigorous cumulative effects analysis that considers synergistic and accumulative effects has been undertaken (NRC 2003). Cumulative effects on Canadian environmental measures and plans are not considered.	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapters 3 and Appendix F. At the programmatic level, a quantitative analysis is not possible as it is unknown where development and disturbance will take place. A qualitative discussion of cumulative impacts is appropriate. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Withheld	Withheld	—	81063	1	Cumulative Impacts	EIS does not adequately address the impacts of this leasing program on the ecosystem over time, with forecast changes in climate and in relation to the development of the landscape to the west (Prudhoe Bay developments.) Impacts to wide ranging arctic species need to be evaluated at a landscape level. What role is the refuge currently playing as a refugia for wildlife from the west in currently developed areas? How will the loss of wild refuge habitat constrain the options for species in need of wide landscapes to survive in the dynamic and changing arctic environment? For example - what are the potential impacts of the entire coastal plain being subject to human disturbance on species such as polar bears and the PCH? The scope needs to include a significant portion of the coastal plain to the west of the Canning River.	Cumulative impact analyses have been revised as appropriate to account for these factors.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Withheld	Withheld	World Wildlife Fund	81184	1	Cumulative Impacts	s. A major omission is the agency's incomplete analysis of direct, indirect, and cumulative impacts of oil and gas activity on the Coastal Plain. For example, BLM fails to examine the cumulative effects of climate change on polar bears, including the impacts that increased ice-free days, coupled with intensive industrial activity on their prime terrestrial denning habitat, will have on the viability of the Southern Beaufort Sea polar bear subpopulation. Baseline information on polar bears, caribou, and the impacts from shipping associated with the proposed development is insufficient in scope to serve as a point of comparison, such that WWF and the public have "no way to determine what effect the proposed action will have on the environment," (Western Watersheds Project v. U.S. Bureau Land Mgmt., 552 F. Supages 2d 1113, 1126-27 (D. Nev. 2008) (citing Half Moon Bay Fishermans' Marketing Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988))) as NEPA requires. See 40 C.F.R. § 1502.15	At the programmatic level, the EIS considers the effects of climate change and discloses the impacts on relevant resource topics. See Chapter 3 and Appendix F. Further, the purpose of the cumulative analysis is to disclose the additive effects of this potential action with other past, present, and reasonably foreseeable actions, including climate change. This EIS does not analyze the direct impacts of climate change alone. Because current management would not authorize any oil and gas leasing in the Coastal Plain, there are no additive effects of an oil and gas program with other ongoing actions, including climate change.
24.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	158	Cumulative Impacts	The DEIS fails to adequately address the international impacts of the proposed oil and gas development. From an ecological perspective, the Program Area provides important habitat for an array of migratory species, including Beluga, Bowhead, caribou, and waterfowl. The failure to include maps in the DEIS that show the full range and migratory paths of these species underscores its deficient analysis of the international impacts of development in the Coastal Plain.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. As described in Appendix F, the cumulative impact analysis area for marine mammals is the range of the affected species population/stock.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Matt	Krogh	Stand.earth	83321	6	Cumulative Impacts	It is not sufficient for BLM to merely mention that climate change literature exists? a DEIS needs to also include an analysis of cumulative climate impacts associated with drilling in the Arctic Refuge and the subsequent transport, shipping, refining, and consumption of the oil produced. As the courts have made clear, mere references to nonNEPA documents is not enough.	A downstream emissions analysis was completed for this EIS. As described in Appendix F, the BLM assumes that the Coastal Plain oil production would not significantly increase the global market (i.e., it would not significantly alter global demand and consumption of fossil fuels).
26.	Matt	Krogh	Stand.earth	83321	9	Cumulative Impacts	The DEIS also fails to meaningfully account for and analyze the cumulative impacts of greenhouse gas emissions associated with oil and gas development in the coastal plain. This omission includes the downstream emissions caused by consumption of the extracted oil and gas. As noted: "Even though greenhouse gas emissions from the proposed program may look minor when viewed on scale of the global climate crisis, when considered cumulatively with all of the other GHG emissions from BLMmanaged land, they become significant and cannot be ignored."	A downstream emissions analysis was completed for this EIS. As described in Appendix F, the BLM assumes that the Coastal Plain oil production would not significantly increase the global market (i.e., it would not significantly alter global demand and consumption of fossil fuels).
27.	Matt	Krogh	Stand.earth	83321	15	Cumulative Impacts	The DEIS is inadequate in describing and analyzing the impacts of shipping associated with oil and gas activity in the Coastal Plain. In determining the scope of the vessel traffic impacts, it is inappropriate to only include vessel transit routes in Bering and Chukchi seas associated with servicing of the oil production facilities. As noted under Impact Analysis, ES4: "The geographic scope of the analysis includes marine vessel traffic from the shore of the refuge to Dutch Harbor, Alaska. Direct and indirect impacts cannot be analyzed on a sitespecific basis within this EIS, but they are analyzed for the program area generally, based on the hypothetical development scenario. Additional sitespecific analyses would be conducted during the permit review process for subsequent exploration and development applications." As with the	The EIS anticipated that a potential production pipeline would be constructed to connect a CPF to the TAPS to move produced oil to market. The cumulative impact analysis area for resources, such as marine mammals, includes the range of the species, taking into account a full range of activities. A discussion of tankers was added to the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	DEIS fiction that the leasing program cannot be held responsible for the subsequent drilling and oil production, it is also fictional that the oil will make it to market without being transported by both pipeline and tanker. The leasing DEIS must also acknowledge that new pipeline construction will be required to connect the Arctic Refuge to TAPS, and that at its southern end, all oil will be shipped to market by tankers that call on TAPS. It is likely that virtually every barrel of oil leaving the Arctic Refuge by TAPS will get loaded onto a ship in Valdez, AK, site of the horrific Exxon Valdez tragedy. Each of these oil tankers could serve markets in Asia or the US, but current vessels from TAPS largely travel to Washington and California. Any opening of the Arctic Refuge to oil drilling needs to examine the total possible production and what that means for vessel traffic that Arctic Refuge drilling would create. It is not appropriate to pretend that Refuge vessels will simply substitute for existing vessels servicing purportedly dwindling North Slope supplies, when in fact continuing exploration may create additional production, and TAPS capacity has the possibility to increase.	(see above)

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Withheld	Withheld	WWF-Canada	85059	7	Cumulative Impacts	Cumulative Impacts Assessment: BLM's draft EIS fails to include a rigorous analysis of the cumulative impacts of development of the Coastal Plain and its potential adverse effects on caribou. Describing the general background and past activities are not adequate enough to substitute as an analysis of cumulative impacts. Adequate baseline data upon which future activities can be quantified and analyzed are missing and must be provided in a revised draft EIS. Further, there is no analysis of the cumulative impacts of development west of the Coastal Plain, in the range of the Central Arctic Herd. A revised draft EIS should analyze these foreseeable impacts, as the draft EIS itself states that further development in the range of the Central Arctic Herd may be necessary due to oil exploration in the Coastal Plain.	Baseline information is provided in the affected environment of the EIS. Each of the EISs for the development activities in the NPR-A include a cumulative impact analysis for those activities. This EIS includes a qualitative assessment of cumulative impacts of this potential action plus other past, present, and reasonably foreseeable actions.
29.	Withheld	Withheld	WWF-Canada	85059	24	Cumulative Impacts	Furthermore, the absence of information regarding shipping and shipping-related impacts in the draft EIS is especially problematic because the number of vessels transiting the Arctic is increasing over time, including vessels serving oil and gas exploration areas in the Beaufort and Chukchi Seas, as well as vessels serving the military, research, tourism, mining, and other industries. The draft EIS must describe and analyze oil and gas-related shipping associated with the proposed development of the Coastal Plain in conjunction with a meaningful discussion of this larger picture of dramatically increasing shipping activities in the Arctic over the next 50 years. Such analysis cannot be postponed until future site-specific NEPA reviews because these will not capture the big picture of cumulative shipping impacts over the 50-year timeframe for the proposed action.	Increases in marine shipping in general were considered in the cumulative impacts analysis. See Table F-1. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Withheld	Withheld	Government of the Northwest Territories	92862	91	Cumulative Impacts	F.3.2 Past, Present, and Reasonably Foreseeable Future Actions Oil and Gas Exploration, Development, and Production "Onshore oil development has been a primary agency of industrial change on the North Slope. Oil and gas exploration has occurred on the North Slope since the early 1900s, and oil production started at Prudhoe Bay in 1977." Comments Development activities have been happening for a long time and technology was not available to monitor the impacts was not in place. It is hard to find a clear description and shapefiles of the progress of development on the North slope over time and the distribution of caribou during those same periods. The CAH now has two separate calving areas on either side of the development. The descriptions of the reasonably foreseeable activities could include more details about what is already happening (e.g. when did Point Thomson start producing) and maps showing these areas would helpful to understand the spatial and temporal aspects of development on the North Slope in order to evaluate cumulative impacts.	This level of detail for cumulative actions is not necessary to meet NEPA requirements.
31.	Withheld	Withheld	Government of the Northwest Territories	92862	92	Cumulative Impacts	The GNWT recommends the BLM complete a comprehensive review of the oil and gas development on the North Slope and the changes in wildlife distribution during that time to inform the cumulative effects assessment. This should include maps showing the temporal aspect of development on the North Slope	This information forms the basis for the affected environment. Maps depicting this information are not necessary to describe the cumulative effects.
32.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	29	Cumulative Impacts	The BLM does not consider how impacts detrimental to birds could impact the ecosystems, economies and communities that rely on Arctic-nesting birds.	The cumulative analysis acknowledges that the cumulative effects on migratory birds are experienced beyond the Coastal Plain (see Appendix F).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	13	Cumulative Impacts	BLM also failed to consider the cumulative impacts from development and other activities in other areas in the Arctic and what that might mean for the Porcupine Caribou Herd, as development to the west has already caused changes to the migratory patterns and health of the caribou herds there. BLM should include an analysis of how subsistence resource abundance and habitat quality have been impacted by a changing Arctic and expanding oil and gas activities. Additionally, BLM must discuss how a changed climate is expected to impact caribou in the future. These analyses should be coupled with the cumulative industrial impacts of oil development on the North Slope.	The cumulative analysis describes the additive impacts of an oil and gas leasing program when combined with other relevant past, present, and reasonably foreseeable projects. Historic development in other parts of the Arctic makes up the current affected environment where applicable. This EIS does not describe the effects of climate change independent of an oil and gas program in the Arctic.
34.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	45	Cumulative Impacts	There is absolutely no discussion of the three reasonably foreseeable future actions identified by BLM. BLM completed failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. BLM also limits its discussion on development in Alpine to existing oil and gas development activities. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut.	These actions are considered in the cumulative analysis. Each action making up the cumulative impact analysis scenario is not called out by name. This is because the cumulative analysis does not discuss specific direct and indirect impacts of each action. The cumulative analysis looks at all cumulative actions holistically.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	46	Cumulative Impacts	Besides oil and gas development across the North Slope, BLM must also consider all reasonably foreseeable future actions that may impact the Porcupine Caribou Herd throughout its migratory range. BLM should not arbitrarily limit the scope of its analysis to the geographic area on or immediately adjacent to the Coastal Plain. BLM must consider any impacts to the herd from activities south of Brooks Range and within Canada.	All known reasonably foreseeable actions were considered in the analysis.
36.	Pamela	Miller	—	94107	4	Cumulative Impacts	The geographic scope of impacts is illogical. Why does the DEIS include “marine vessel traffic from the shore of the refuge to Dutch Harbor, Alaska?” (DEIS ES-4). Why not Seattle, China, or other destinations where goods and services would originate. Why not consider the geographic scope of the entire North Slope for oil and gas cumulative impacts? Why not the Trans-Alaska Pipeline System including the tanker terminal and tankers along the West Coast shipping routes, as well as those of tanker exports to the Asian markets? Would oil or gas be transported from the Arctic Ocean and not Valdez? The cumulative impacts analysis is generally limited to the geographic scope of the planning area (DEIS ES-4), but it does not make sense to exclude the nearshore State waters adjacent to the Refuge Coastal Plain, nor the federal OCS waters beyond the State 3 mile zone.	Appendix F describes the geographic scope, or cumulative impact analysis area, for all resources. For some, that includes the range of a species. Other resources are limited in scope to the project area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Mark	Jorgenson	—	94411	2	Cumulative Impacts	The limiting of potential development in the 1002 Area to 2000 acres and 19 well sites is not reasonable. In the Alpine experience, future expected expansion and cumulative impacts were downplayed in the EA/EIS process, contrary to the reasonable and easily foreseeable scenario that development would extend to the north, south, and west of the initial facilities, as is currently happening. While the Tax Cuts and Jobs Act of 2017 (Tax Act) specified a limitation of 2000 acres, this could easily be amended by future legislation to increase permitted acreage. The cumulative impacts analysis needs to address the likelihood for expansion if large oil reserves are found.	Because the Tax Act limits the area of development to 2,000 acres, this EIS analyzes that area of impact. NEPA does not require analysis based on speculation of future legislation.
38.	Harry K.	Brower Jr.	North Slope Borough	95612	30	Cumulative Impacts	Finally, we note that BLM is working on a Cumulative Alaska North Slope Air Quality Regional Model, to assess the cumulative effects of BLM-authorized oil and gas development on the North Slope, including on the Coastal Plain. While the DEIS does not indicate when this study will be completed, we urge that any results (even if preliminary) be analyzed in the Final EIS or, if not available by that time, in any subsequent National Environmental Policy Act (NEPA) documents relating to BLM activities on the North Slope.	The North Slope Air Quality Regional Model is being prepared to support management actions affecting the NPR-A, the North Slope, Prudhoe Bay, and other oil and gas-producing areas, such as the Coastal Plain. The model is being developed with input from the air quality technical workgroup. It will model air quality and AQRV impacts as oil and gas development progresses over time, which will support decision-making for oil and gas-related actions throughout the North Slope, including actions in the Coastal Plain. Future site-specific NEPA analyses will take available modeling results into consideration, if available.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Brook	Brisson	Trustees for Alaska	96981	63	Cumulative Impacts	Overall, and as explained in greater detail below for specific resources, the BLM's cumulative impacts analysis fails to contain the "quantified or detailed information" required. Instead, it largely consists of general statements regarding potential effects and contains very little substantive information. ...Instead, in some resource sections, BLM avoids discussing the cumulative impacts associated with reasonably foreseeable post-lease oil and gas activity by suggesting those would be discussed in later NEPA analysis. ¹⁸⁶ In others, it avoids the discussion by making mere conclusory statements about the cumulative impacts. These statements acknowledge the potential for cumulative impacts, but fail to provide any explanation or analysis of what they would be. ¹⁸⁷ ...The agency also avoids discussing the cumulative impacts for this project by referring readers to cumulative impacts analysis done for other projects. ...Similarly, BLM asserts there is existing information on cumulative impacts to some resources, but fails to explain whether or how that information has been considered in this planning process. ...Overall, this approach is insufficient to satisfy NEPA and fails to acknowledge and account for the considerable cumulative impacts of oil and gas activities. ¹⁹¹ BLM must identify and describe, with specificity, the projects and impacts.	Where the cumulative impact analysis area is limited to the program area (see Appendix F), there are few actions that contribute to any cumulative effects. This is because there is little activity occurring in the Coastal Plain area. Where the cumulative impact analysis area is broader than the program area, actions are considered cumulatively, not individually.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Brook	Brisson	Trustees for Alaska	96981	64	Cumulative Impacts	BLM defines the geographic scope of the cumulative impacts analysis as the program areas and the North Slope of Alaska, but notes that for some resources the impacts areas is broader. ¹⁹² But in setting out the agency's approach to impacts analysis, it is clear that the agency is limiting its impacts analysis improperly to the program area, i.e., the Coastal Plain. ¹⁹³ BLM must properly define the geographic scope of its impacts analysis by resource issues, taking into consideration geographic formations, habitat and resources uses, migrations, and landscapes.	BLM has defined the geographic scope of the cumulative effects analysis for the various resources taking into account the factors cited. See Appendix F for the cumulative impact analysis area for each program area.
41.	Brook	Brisson	Trustees for Alaska	96981	65	Cumulative Impacts	BLM defined the temporal scope of the cumulative impacts analysis as from the 1970s through realization of the hypothetical development scenario, which it estimated at 50 years. ¹⁹⁴ This is an insufficient temporal scope as it does not necessarily account for full reclamation, including ongoing monitoring, of oil and gas development on the Coastal Plain. It is also inconsistent with the development scenario that BLM puts forth. The timeline considered there indicates that additional oil fields could be developed as many as 85 years after the ROD is signed, and that abandonment and reclamation could occur up to 130 years after the ROD. ¹⁹⁵ BLM's temporal scope of the cumulative impacts should be at least as long as the timeline the agency identifies could follow its implementation of an oil and gas program.	Timeframes, like geographic scope, can vary by resource. Timeframes are based on the duration of the direct and indirect effects of the proposed action and alternatives, rather than the duration of the action itself. NEPA requires that cumulative impacts consider all past, present and reasonably foreseeable actions.
42.	Brook	Brisson	Trustees for Alaska	96981	66	Cumulative Impacts	BLM also improperly excludes oil and gas activities on non-federal lands, including State of Alaska lands adjacent to the Coastal Plain and private lands within the boundaries of the Coastal Plain, asserting that it is not reasonably foreseeable. ¹⁹⁶ These both should be analyzed to the extent practicable in the leasing program EIS.	Appendix F includes all past, present, and reasonably foreseeable actions.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Brook	Brisson	Trustees for Alaska	96981	67	Cumulative Impacts	With regards to the oil and gas activities on non-federal lands, it does not appear that BLM considered 3D seismic exploration proposed by SAExploration and permitted by the Alaska Department of Natural Resources to take place this winter on State of Alaska lands immediately adjacent to the Coastal Plain as a present action.197	The SAExploration proposal is listed as a reasonably foreseeable project analyzed in Appendix F. Appendix F has been updated to reflect changes in the proposed project.
44.	Brook	Brisson	Trustees for Alaska	96981	68	Cumulative Impacts	Additionally, there is information available regarding leases in marine waters, including State of Alaska leases and federal Outer Continental Shelf leases.198 BLM must analyze what the cumulative impacts of oil and gas activities on these leases could be to resources in the Coastal Plain. [198 See https://www.boem.gov/National-OCS-Program/ (proposal for a new leasing plan that would include six lease sales by 2024 in federal waters of the Arctic Ocean); http://dog.dnr.alaska.gov/Documents/Leasing/Legislature5YearLeasingReport_20180130.pdf (showing planned Alaska lease sales in state waters); http://dog.dnr.alaska.gov/Documents/Maps/ActivityMaps/NorthSlope/NS_ActivityMap_Oct2018.pdf (showing activities in state waters); Audubon Alaska, Ecological Atlas of the Bering, Chukchi, and Beaufort Seas at 280-281 (2017), https://ak.audubon.org/sites/g/files/amh551/f/arctic_atlas_composite_144ppi-final.pdf (describing impacts of offshore oil and gas activity); Nuka Research & Planning Group, LLC, Oil Spill Prevention and Response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable cumulative impacts of oil and gas activities on these leases could be to resources in the Coastal Plain.]	The existence of issued leases alone does not indicate that oil and gas activities are reasonably foreseeable on those leases. Many leases on the North Slope and offshore thereof never experience exploration or development activities. Regardless, the cumulative impact analysis includes such offshore leased areas generally (see Table F-1), but focuses on those specific actions that have been identified and are likely to occur (see Appendix F).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Brook	Brisson	Trustees for Alaska	96981	69	Cumulative Impacts	It is unclear from BLM's description whether it is excluding consideration of projects on State lands or only inholdings owned by Alaska Native Corporations. As explained above, there are plans to undertake oil and gas activities on adjacent State lands and BLM must analyze them. Additionally, excluding oil and gas activities and development on inholdings held by Kaktovik Iñupiat Corp. and Arctic Slope Regional Corp. is unreasonable. BLM and DOI are well aware that ASRC has advocated for years to be able to develop these lands, and were a leading voice in advocating for passage of the Tax Act.199 It is therefore reasonably foreseeable that the corporations will act quickly to do so. We also note that provisions of the Chandler Lake Agreement grant ASRC extensive rights to develop and sell sand and gravel from their lands. BLM must analyze the likely impacts from the exercise of those rights as currently written.200 Additionally, SAExploration's pending 3D seismic proposal includes operations on these lands.201 Because facilities to support a Coastal Plain oil and gas program could be located on these lands (such as gravel mines, pipelines, road, central processing facilities), BLM must analyze that.202 Related to this point, BLM seems to acknowledge that uses of these lands related to and oil and gas program will increase.203 BLM's conclusions and assumptions are, therefore, inconsistent.	The EIS takes into account oil and gas activities that may occur on Native owned lands in the Coastal Plain. The reasonably foreseeable development scenario recognizes that such development may interact with development on Federal lands. The cumulative impact analysis includes other North Slope oil and gas activities generally (see Table F-1), but focuses on those specific actions that have been identified and are likely to occur (see Appendix F), including those on State and Native-owned lands (e.g., Point Thompson, Alpine CD-5, and Greater Mooses Tooth). There are no specific proposals to develop oil and gas or gravel resources on Native-owned lands in the Arctic Refuge, so such future activity necessarily must be described in general terms.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Brook	Brisson	Trustees for Alaska	96981	70	Cumulative Impacts	BLM also excludes the Alaska Strategic Transportation and Resources (ASTAR) project from its cumulative impacts analysis. ²⁰⁴ BLM should analyze the impacts of this project on the Coastal Plain. First, BLM states that the cumulative impacts analysis is often based on plans, permits, or fiscal appropriations, and that projects should be considered even if there is a degree of uncertainty. ²⁰⁵ The State of Alaska currently has \$7.3 million in funding allocated for the project and the FY2020 Governor's Amended Budget includes an additional \$2.5 million. ²⁰⁶ As currently proposed, in addition to other roads across the North Slope, there would be an access road running up and adjacent to the western boundary of the Coastal Plain. ²⁰⁷ A pilot program for the project was conducted last winter. A purpose of the project is also to invest in new infrastructure that supports the value of the Trans-Alaska Pipeline System, ²⁰⁸ which the BLM assumes would transport oil developed from the Coastal Plain. The Alaska Department of Natural Resources indicated in an update to the Alaska Legislature in early 2018 that state and federal permitting process are underway. ²⁰⁹ Additionally, in a recently-initiated NEPA process for the NPR-A, the BLM indicates that it will be considering the ASTAR project. ²¹⁰ Including it in one planning process but excluding it here is unreasonable. In sum, there is sufficient information and certainty for BLM to use to analyze the impacts of the ASTAR project in the draft EIS.	The ASTAR project has been added to the list of reasonably foreseeable future actions to be analyzed (see Appendix F).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Brook	Brisson	Trustees for Alaska	96981	71	Cumulative Impacts	Finally, BLM states that the permitting requirements of other agencies would reduce cumulative impacts. ²¹¹ BLM makes the assertion without any analysis, citation, or support. Unless BLM actually analyzes the impacts resulting from various agencies permitting requirements, BLM cannot make this conclusion. BLM must explain the basis for this conclusion, including conducting the necessary analysis to support it.	The statement is not found on page F-3 of Appendix F as referenced. The EIS makes clear that all oil and gas activities will be subject to other federal, state and local laws and associated permit conditions required by other permitting agencies. Such requirements reduce impacts, including cumulative impacts, and are incorporated into the impact analysis.
48.	Brook	Brisson	Trustees for Alaska	96981	97	Cumulative Impacts	BLM completely ignores the fact that it is currently preparing to approve an extensive pre-leasing seismic proposal from SAExploration (SAE) throughout the Coastal Plain. ⁷⁷⁶ That is a reasonably foreseeable-and connected-action that, if it goes forward as proposed, will itself have significant impacts to soil and permafrost and cumulatively combine with and exacerbate other impacts to soils and permafrost. ⁷⁷⁷ The EIS estimates that there will be around 900 square miles of impacts from seismic activities. But SAE's proposal alone would directly impact 150,000 acres and would involve around 37,800 miles of seismic lines. ⁷⁷⁸ Given the near certainty of other seismic testing proposals, BLM's conclusion that there will be only 900 square miles of impacts is unsupported by, and contrary to, the record. It does not take into consideration the fact that seismic exploration is not a one-time operation. It is often repeated as companies move to subsequent oil and gas phases, with exploration in some areas occurring on a yearly basis. It also does not take into account the proprietary nature of seismic survey results, which can lead to different companies repeating seismic surveys across the same area to gather their own data.	The hypothetical development scenario has been revised to consider seismic activity across the entire Coastal Plain, though it is highly unlikely that leasees would conduct seismic activity on areas outside their leasehold. Where existing seismic data is available for purchase, lessees typically purchase the data in lieu of collecting it themselves, as doing so is generally more cost and time effective. Companies that collect seismic data over large unleased areas generally do so with the intention to sell the data to potential bidders and lessees. For these reasons, the likelihood of overlapping 3D seismic surveys is low. SAE's proposal is considered in the EIS as a reasonably foreseeable future action as it relates to cumulative actions.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49.	Brook	Brisson	Trustees for Alaska	96981	99	Cumulative Impacts	BLM's discussion of the impacts to the Coastal Plain that occurred from the seismic program in the 1980s is also inadequate. BLM notes in passing in its cumulative impacts section that previous seismic exploration and an exploratory test well disturbed the surface vegetation and impacted the thaw of permafrost, changed drainage patterns, and changed vegetation growth for over 25 years after disturbance.779 BLM then goes on to state that, while improvements have been made to avoid impacts on the ground surface, future seismic surveys may have similar impacts.780 This is not an adequate assessment of the impacts. BLM has not provided any indication that it has fully analyzed the potential cumulative impacts from seismic surveys, as evidenced by the fact that the agency does not even account for the current seismic proposal before the agency. BLM's cursory acknowledgement that there are likely to be similar impacts does nothing to lay out why those impacts previously occurred, whether there are specific ways in which impacts could be avoided now, how those impacts are likely to cumulatively impact the region, or any other information. BLM's note that technologies have improved also ignores the reality of SAE's proposal and is not supported. SAE's proposal involves much of the same equipment that caused significant impacts in the 1980s, but its proposal is substantially more intense than that conducted in the 1980s.781 That means that it is likely to lead to even more extensive damage on the Coastal Plain.782 BLM needs to fully discuss and analyze the impacts of the previous seismic program from the 1980s as part of its current assessment.	An analysis of direct and indirect impacts of seismic exploration will be done for specific seismic exploration actions. The impacts of the previous seismic program make up the current affected environment, and this EIS documents the affected environment. The hypothetical development scenario has been revised to consider seismic activity across the entire Coastal Plain. SAE's proposal is considered in the EIS as a RFFA as it relates to cumulative actions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Withheld	Withheld	—	97404	3	Cumulative Impacts	5. The cumulative effects section needs additional information. Just as a likely O&G development scenario was produced for federal lands, a comparable effort must be made for state and tribal lands in the coastal plain in order to fully disclose the cumulative effects of your proposed action O&G development on tribal lands is a reasonably foreseeable future action, and it is a connected action whose effects must be considered. As a minimum, this development scenario must be completed in order to conduct consultation with the FWS under ESA. The development of tribal lands would not occur BUT FOR the development in your proposed action. Without this step you cannot determine the cumulative effects of your proposed action on any threatened or endangered species, or any species of state concern.	The cumulative impact analysis considers all reasonably foreseeable actions (see Appendix F). Connected actions are limited to actions that are currently proposed (ripe for decision). Actions that are not yet proposed are not connected actions, but they may need to be analyzed in the cumulative effects analysis if they are reasonably foreseeable. The EIS takes into account oil and gas activities that may occur on Native owned lands in the Coastal Plain. The reasonably foreseeable development scenario recognizes that such development may interact with development on Federal lands. There are no state owned lands in the Coastal Plain,
51.	—	—	United States Fish and Wildlife Service	97942	71	Cumulative Impacts	Page 3-133: The DEIS states that post-lease activities could include seismic, but fails to consider the fact that due to the future leasing activities analyzed in the DEIS, seismic surveys could occur prior to leasing. We recommend correcting this in the final EIS.	The hypothetical development scenario has been revised to consider seismic activity across the entire Coastal Plain, including both before and after leasing. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analyses would be done for any proposed seismic explorations. Additionally, seismic exploration projects are also considered in the cumulative analysis (see Appendix F).
52.	—	—	United States Fish and Wildlife Service	97942	202	Cumulative Impacts	Be explicit about what offshore actions are planned so that these can be considered in the range of effects.	All reasonably foreseeable actions are disclosed in Appendix F.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Pamela	Miller	—	98116	3	Cumulative Impacts	The other alternative is sea water treatment plants; however, there is no information about the potential impacts of withdrawing zillions of gallons of estuary water, making it fresh, and then disposing of that effluent out into the ocean. It will be warmer. It will be saltier. It will affect the nearshore estuary of the aquatic system that supports migrating fish, both anadromous and otherwise in the lagoons. It will affect the habitat for birds in the lagoons and nearshore waters. None of that has been addressed.	Additional text has been added to Section 3.3, Biological Resources.
54.	Pamela	Miller	—	98116	6	Cumulative Impacts	There is no conclusions about impacts being major, minor or moderate or the magnitude of the impacts. The cumulative impact analysis is token, at best, and does not provide a long-term view of what this full potential oil development with where the potential oil -- all the oil prospect are, what it could look like into the future.	A classification of impacts as major, minor, moderate, or negligible is not required under NEPA, particularly when no scale for such classification can be identified.
55.	Brook	Brisson	Trustees for Alaska	98270	148	Cumulative Impacts	Due to the narrow scope of the affected environment discussions, there is very little baseline information in the DEIS regarding the important marine areas along the marine shipping corridor to the west and south of the program area that could be adversely affected by shipping activities associated with the proposed action. Some important marine areas left out of the DEIS are in the Beaufort Sea and Chukchi Sea regions, including the Chukchi Corridor, Hanna Shoal, Herald Shoal, Barrow Canyon East, Smith Bay, Harrison Bay-Colville Delta, Beaufort Shelf Break, and Oliktok Point to Demarcation Bay, which are described in the attached reports.1890 Other important marine areas not addressed in the DEIS are in the Bering Sea region, such as the Bering Strait and the waters surrounding King Island, St. Lawrence Island, and Nunivak Island, as described in the attached report	The hypothetical development scenario is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario. Project specific actions will be analyzed in subsequent NEPA analyses when exploration and development projects are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	prepared by the U.S. Coast Guard. 1891 Including baseline descriptions of these important marine areas in a revised DEIS will facilitate appropriate discussions regarding the direct, indirect, and cumulative impacts arising from the shipping activities associated with proposed Coastal Plain oil and gas operations. 1890 See, e.g., Pew Charitable Trusts, et al, A Synthesis of Important Areas in the U.S. Chukchi and Beaufort Seas: Best Available Data to Inform Management Decisions (April 2016), available at https://www.pewtrusts.org//media/assets/2016/05/synthesis_of_important_areas_us_chukchi_beaufort_seas.pdf; Natural Resources Defense Council, et al, Environmental Risks with Proposed Offshore Oil and Gas Development off Alaska's North Slope (Aug. 2012), available at https://www.nrdc.org/sites/default/files/drilling-off-north-slope-IP.pdf. 1891 See, e.g., U.S. Coast Guard, Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea, Docket Nos. USCG-2014-0941 and USCG-2010-0833 (Dec. 23, 2016), available at https://www.regulations.gov/contentStreamer?documentId=USCG-2014-09410040&attachmentNumber=1&contentType=pdf.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Brook	Brisson	Trustees for Alaska	98270	151	Cumulative Impacts	Shipping-related oil and hazardous substance spills and resulting impacts are not discussed in any substantive way in the DEIS. While the potential for oil and hazardous substance spills is evaluated in the solid/hazardous waste section of the DEIS, this section focuses on terrestrial and freshwater impacts resulting from spills associated with onshore operations.1899 There are also a few sentences referring to the potential for marine impacts from oil spills in the water resources section, but this language refers to spills from onshore barge docking sites, not from shipping.1900 The apparent rationale for the general exclusion of shipping-related spills from the DEIS analysis is buried in the marine mammal section. The narrative strongly downplays the potential likelihood, extent, and harm of any oil or hazardous substance spill by suggesting that (1) there is a "low risk" of spilled fuel if a vessel carrying fuel were to run aground during barging, (2) a large oil spill in the Arctic marine environment is unlikely because "[t]o date," such as a spill has "not occurred," (3) spill risks will be reduced through "safeguards" specified in the required oil spill prevention and contingency plans, (4) the quantities of oil or hazardous substances likely to be released would be "relatively small," and (5) potential spills during refueling at sea would be only "small, accidental" spills.1901 This rationale is deeply flawed. While bulk fuel has historically been delivered to the North Slope by tanker truck along the haul road, bulk fuel deliveries by barge have commenced and are likely to become the preferred option in the future. The first large-scale fuel delivery by barge took place in September 2018, and it carried 2 million gallons of fuel from Valdez to Deadhorse.1902 A collision, grounding, or other accident resulting in	It is assumed that barging is to provide supplies and modules. Barging is not discussed as a shipping method for crude oil in Appendix B. The hypothetical development scenario anticipates that barging will be very limited.

S. Public Comments and BLM Responses (Cumulative Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the discharge of even half the cargo of a fuel barge of this size (i.e., 1 million gallons) would be 10 times greater than BLM's own threshold for a "very large" spill, 1903 and it would constitute a major spill by any other estimation as well. Moreover, as the ice-free, open water season lengthens due to warming temperatures in the Arctic, transporting fuel by barge is likely to be viewed as a more convenient and/or cost-effective method of transporting fuel compared to the much smaller and more frequent 10,000-gallon increments that can be transported via tanker truck. 1904 Barge deliveries may even be the only feasible way of transporting fuel in support of Coastal Plain oil and gas operations because of the lack of a road between Deadhorse and Kaktovik. 1905	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Brook	Brisson	Trustees for Alaska	98271	181	Cumulative Impacts	In addition, it is surprising that no mention or analysis is made of the Arctic Strategic Transportation and Resources (ASTAR) project in the cumulative effects section. Appendix F states that "ASTAR is in its preliminary stages"1301 but does not otherwise justify ignoring the project in analyses of cumulative effects. The DEIS defines reasonably foreseeable future actions as those that are likely, or reasonably certain, to occur based on plans, permit applications, and fiscal appropriations.1302 While the ASTAR project has not yet secured funding to build infrastructure, it has acquired funding from the Alaska State Legislature to conduct a planning process. The November 2, 2018 letter from the Alaska Department of Natural Resources and North Slope Borough to the DOI Assistant Secretary for Land and Minerals Management1303 requesting BLM revise the Integrated Activity Plan (IAP) for the National Petroleum Reserve - Alaska (NPR-A), in part because of the ASTAR process, seems to clearly indicate intention to proceed. Furthermore, since the ASTAR project first started posting maps displaying potential futures for the project, the maps have included potential roads that stretch up to the western edge of the Arctic Refuge Coastal Plain. These maps have changed multiple times since they were initially posted in 2017, but the most recent map1304 still shows roads passing along the edge of the program area, which falls within the range of both the CAH and PCH. This warrants inclusion in the cumulative effects analysis.	The ASTAR project has been added to the list of reasonably foreseeable future actions to be analyzed (see Appendix F).

S.3.10 Direct/Indirect Impacts

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Donald	Walker	—	68	50	Direct/Indirect Impacts	A study of impacts to upland tundra from current exploration on the MacKenzie River Delta, Canada, reported that initial impacts are similar to or somewhat greater than those reported from 2D surveys in the same area 30 years previously. ^{70,71} A recent BLM Environmental Assessment for seismic surveys in northern Alaska stated that "seismic exploration may vary from having no observable effects in some situations to damaging vegetation to the extent that it may take years or even decades to heal. These impacts occur despite existing stipulations on operations, and cannot be further mitigated, given the types of equipment currently used." ⁷²	The EIS has been updated to include more recent data and studies related to seismic exploration activities.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Douglas	Früge	—	30574	2	Direct/Indirect Impacts	On Page 1-6 the Leasing EIS describes the BLM's interpretation of the 2,000 surface acre facility limit specified by the US Congress in PL 115-97 as only those areas to be covered by production and support facilities. I believe this interpretation to be too restrictive since any and all types of surface disturbance and structures can potentially affect the environment --- not just those directly associated with oil and gas production and distribution facilities. In addition, there are potential effects from some types of structures that may not actually be in direct contact with the ground surface (e.g., elevated portions of pipelines) and therefore not subject to the 2,000 surface acre limitation. It is also not clear whether the BLM evaluated the impacts of all disturbances in evaluating the alternatives or only those included in its interpretation of the 2,000 surface acre limitation. If the BLM did not consider the effects of all potential structures or facilities, the actual levels of environmental impacts may be underestimated in the document.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines, and the rationale as to why certain facilities may not be included. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.
3.	Russell	Oates	—	31550	1	Direct/Indirect Impacts	Failure to include and adequately account for the distribution of the pipeline corridors as part of the development footprint in the caribou calving area is a fatal flaw to this EIS. Numerous studies (several of which you have cited) have demonstrated avoidance behavior of pipelines by cows and calves. In the restricted confines of the calving area available to this herd, a spider web of pipelines will spell long-term disaster.	Section 3.3.4 includes impacts on caribou from oil and gas development, including from pipelines.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	41048	1	Direct/Indirect Impacts	The draft EIS illegally violates the statutory language of Section 20001(c)(3) of PL 115-97 in section 1.9.1. Congress mandated that no more than 2000 acres have above ground oil and gas drilling infrastructure for production and support facilities (including air strips, gravel berms or piers for support of pipelines). The Bureau of Land Management (BLM) illegally amends the statutory limit by adding to the 2000-acre limit, the phrase "at any given time," which would allow the amount of acres damaged by above ground infrastructure to be drastically expanded beyond the 2000-acre limit in the law. Further, with no statutory authority, BLM excludes gravel mines and pipelines from the 2000-acre limit. The law specifically references pipelines and gravel.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.
5.	Walter	Bala	—	44941	1	Direct/Indirect Impacts	I hope and trust the "HARD LOOK" has included extensive analysis of "measures to mitigate adverse impacts." This should have included extensive financial provisions to protect the direct impact of construction, operation and eventual restoration. The cost if extraction must include a cost of restoration - if possible - with funds held in escrow.	. The BLM believes that the objective is appropriate. Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).
6.	James	Warren	—	45446	6	Direct/Indirect Impacts	This discrepancy in acres impacted is important because the "2000 acres" is being used to convince the public that the impacts are NOT SIGNIFICANT. That is, the birds and the mammals, terrestrial and marine, won't be SIGNIFICANTLY IMPACTED. But this is not a true measure. "2000 acres" doesn't include the gravel mining operations and the various other industrial-scale operations, such as seismic testing operations, that will impact the Arctic Refuge Coastal Plain.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Gregg	Spindler	—	45493	9	Direct/Indirect Impacts	far more than the 2000 acre allotment will be subjected to irreversible industrial development. Once removed, the landscape can never be truly “restored” without replacement of the mined materials. Gravel and sand pits after grading should never be considered as “restored”.	Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134; the BLM would also apply these NPR-A regulations to the Coastal Plain).
8.	Withheld	Withheld	—	48698	4	Direct/Indirect Impacts	It is erroneous to claim that ice roads, elevated pipelines, and gravel mines do not count as surface development, as each of these have been shown to have impacts on ecology and wildlife (see attached documents for examples). Therefore these and all similar development-related infrastructure must be included in the 2000 acre development cap.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.
9.	Tim	Hogan	—	54587	1	Direct/Indirect Impacts	Proponents of drilling predict a total full-development infrastructure footprint of 2000 acres in the 1002 Area. This estimate is not based on realistic scenarios of how the oil is distributed and where facilities will need to be located. It ignores many types of impact that will likely occur - including the impacts of ice roads, gravel roads, gravel mines, pipelines, powerlines, infrastructure-related flooding, thermokarst, road dust, and seismic trails.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.
10.	Eric	Parsons	—	55143	1	Direct/Indirect Impacts	The interpretation of 2000 acres is misleading. I believe it should be as the total amount of ground effected by development. Sites such as gravel quarries and road borrow sites are equally disturbed as construction of a gravel production pad. Secondly, the term should be 2000 acres for all time, not just under active lease. It opens the question to what state of reclamation is given to previously used acreage after a lease term is up. A gravel pad being used is the same destroyed land as a gravel pad not being used.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Withheld	Withheld	—	55209	5	Direct/Indirect Impacts	The draft EIS interprets that ice roads and pads, elevated pipelines, and gravel mines do NOT count as surface disturbance and, therefore, are not considered in the 2,000-acre limit of surface acres. BLM is also only counting 2000 acres “at any given time” This interpretation would allow for the entire coastal plain to see the impacts of development over time!	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.
12.	Withheld	Withheld	—	55252	7	Direct/Indirect Impacts	gravel pits will have a major impact on the environment, and it is not reasonable to exclude them from the 2,000 acre development limitation.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.
13.	Michael	Boyd	—	55303	1	Direct/Indirect Impacts	The BLM's failure to include pipelines, drill pads, and gravel mines as part of 2000 acre limit on oil infrastructure development is sophistry. If those features don't represent part of oil and gas facilities, then they should not be allowed	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2 of this Appendix.
14.	Paul	Reichardt	—	55513	4	Direct/Indirect Impacts	The proposal that gravel mines do not qualify as surface disturbance (because they are not directly related to leasing and development) doesn't pass the “sniff test.” While elevated pipelines themselves can arguably be excluded from surface disturbance, what about the maintenance roads associated with them (e.g., roads like those along and under long stretches of the pipeline along the Dalton Highway)? It was not clear to me that they were included in the estimate of road surface associated with leasing and development.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Paul	Reichardt	—	55513	5	Direct/Indirect Impacts	The idea that the phrase “during the term of the leases” in the Tax Act requires, or even allows, ‘temporal limits’ on surface disturbances implies that over time all of the leasing area could have surface disturbance as long as all but 2,000 acres of it has been “reclaimed.”	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.
16.	Dave	Gordon	—	55523	1	Direct/Indirect Impacts	The Tax Act claims only 2000 acres will be developed. This is an absurd claim. The DEIS needs to account for all lands that could be modified, including river beds for gravel extraction, roadways, pipelines, airfields, not just the structures to be built. It also needs to adequately address the impacts a spider web of development will have upon all animal communities. As development has expanded in Prudhoe Bay & elsewhere in the Arctic, caribou & other wildlife have been restricted from vast areas because they have been cut off.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
17.	Richard	Sumner	—	56477	3	Direct/Indirect Impacts	The DEIS provides little information about the practicability and effectiveness of mitigation to offset large-scale disturbance to landscape connectivity and functions (e.g., hydrological flows at “break-up” and wildlife migration patterns). Successful, large scale ecological restoration of North Slope oil and gas development infrastructure has not been demonstrated.	The action alternatives analyze the effectiveness of proposed lease stipulations and ROPs as they relate to oil and gas activities on the Coastal Plain. Future site-specific mitigation will be tailored to the specific location of development and resources or activity.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Richard	Sumner	—	56477	4	Direct/Indirect Impacts	The DEIS does not describe an adaptive management strategy whereby environmental monitoring information is specifically used to inform program implementation on a project by project basis, for each program alternative. A fundamental component of adaptive management is the adoption of management response options used with monitoring information shows unanticipated environmental harm and a corresponding lack of mitigation opportunity or performance.	Exceptions, waivers, and modifications provide an effective means of applying “adaptive management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
19.	Nancy	Waterman	—	56488	2	Direct/Indirect Impacts	these 2,000 acres may not be one contiguous spot; they could be spread throughout the coastal plain relative to locations of desired oil prospects. BLM must identify all production and support facilities that would be included in this limitation and explain how it will be implemented and enforced. Alternatives and analyses must include all possible site scenarios for the 2,000 acres limit across the entire coastal plain, including analyses specific to each potential 400,000 acre lease sale.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
20.	Randy	Oliver	—	56583	9	Direct/Indirect Impacts	The 2,000-acre limit should include, rather than exclude, any gravel mines, or other permanent disturbances to the landscape.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.
21.	Chad	Hansen	—	56842	3	Direct/Indirect Impacts	BLM needs to include all oil and gas development-related infrastructure in its 2,000 acre calculation.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Catherine	Coward	—	56854	1	Direct/Indirect Impacts	The proposed numbers of acres to be developed is misleading at best. Because the acreage count does not include roads or above ground pipeline, and because the drilling platforms will be “postage stamped” across the plain, the entire coastal area will be effected, and ultimately destroyed.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
23.	Catherine	Coward	—	56854	2	Direct/Indirect Impacts	It is stated that slant/directional drilling may be used, but there is nothing in the draft to require its use. Because slant/directional drilling is more expensive, it is unlikely, and therefore misleading, to assume it will be used.	The EIS utilizes the best available information in developing the hypothetical development scenario. Technologies will evolve over the life of the program and may be utilized in the future.
24.	Withheld	Withheld	—	57064	4	Direct/Indirect Impacts	The 100 year impacts need consideration or the worse case scenario.	NEPA does not require analysis of a worst-case scenario.
25.	Withheld	Withheld	Denver Audubon	57090	4	Direct/Indirect Impacts	Public Law 115-97 limits to 2,000 acres the areas which may be covered by production and support facilities at any given time. But it also provides for the issuance of easements and rights-of-way across any lands, whether leased or not, and production and support facilities may be associated with those easements and rights of way. Since the 2,000 acre limit applies to lands covered by production and support facilities at any given moment, reclaimed federal land would not count towards this limit. Thus oil and gas production could move across the Coastal Plain, over a period of years affecting far more than 2,000 acres, as long as only that acreage was covered at any given moment of time. (EIS, 1-6). Obviously oil and gas development could impact a much greater acreage of the Refuge than just the 2,000 acres often cited.	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Alex	Johnson	—	57132	1	Direct/Indirect Impacts	The process is fundamentally flawed due to the conclusion that leasing itself does not cause any significant impacts. Leasing itself will cause significant socioeconomic impacts to the people and communities of the Coastal Plain, the North Slope, and the state of Alaska as a whole. Leasing affects the psychological well-being of community members, recreationists, wilderness, and wildlife enthusiasts across the country. Increased leasing destabilizes the management regime that has been in place since ANILCA's passage. Leasing and corresponding exploration associated with those leases within the Arctic National Wildlife Refuge 1002 area will also directly impact the wildlife resources within the refuge.	The passage of ANILCA set aside the 1002 Area for oil and gas exploration. In a report to Congress in 1987, the USFWS made the recommendation that the area be made available for oil and gas leasing. While there are no direct impacts from leasing, indirect impacts that will occur as a result of leasing have been analyzed.
27.	Withheld	Withheld	—	57179	1	Direct/Indirect Impacts	While the law that opened up this wilderness area to development specifies only 2000 acres will be devoted to drilling, it does not include infrastructure disturbances such as roads, pipelines, gravel mines and other structures that will cut across the refuge and reach much more than the 2000 designated acres. The EIS does not address the impact of this extended "footprint" across a much wider area of the Refuge. This must be taken into account in the EIS.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
28.	Joan	Norberg	Yukon Conservation Society	57318	3	Direct/Indirect Impacts	The DEIS does not provide references for its assertion of the footprint or how it defines the zone of influence. However, assuming that 2000 acres is accurate, simply applying the zone of influence included in the DEIS means the effective footprint is much larger. Therefore, YCS respectfully recommends that the footprint of the project be recalculated to include the zone of influence	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	JOSEPH	Kohn MD	We Are One, Inc. - WAO	57795	1	Direct/Indirect Impacts	The EIS should include scientific studies AND Indigenous traditional science.	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. The BLM has used this information to help inform development of the EIS and to ensure a more robust analysis.
30.	Pamela	Weaver	—	58188	1	Direct/Indirect Impacts	I do not agree that gravel mining should be excluded from infrastructure consideration. These pads cannot exist without gravel and these gravel mines would not exist without development, therefore they are an essential part of any plan for development and must be included in the footprint.	The BLM has revised Section 1.9.1 to include gravel mines as support facilities subject to the 2,000-acre limit. The language of each lease stipulation has been revised to indicate whether gravel mines are allowed.
31.	Charlotte	Basham	—	58396	5	Direct/Indirect Impacts	The DEIS does not include ice roads and pads, elevated pipelines, and gravel mines in its assessment of necessary infrastructure. All structure should be included in your analysis; otherwise, the document is inaccurate and deceiving.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
32.	Withheld	Withheld	—	58633	2	Direct/Indirect Impacts	It contains proposed infrastructure requirements but allows companies to obtain waivers, exceptions, and modifications of any of these requirements. It is impossible to comment on the impacts of development if the public does not know what requirements actually will be imposed.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
33.	Withheld	Withheld	—	58633	3	Direct/Indirect Impacts	The tax law Congress passed authorizing development in the refuge limits "surface disturbance" to 2,000 acres. BLM has interpreted the 2,000 acre limitation to exclude ice roads, hundreds of miles of elevated pipelines, gravel mines and other types of infrastructure, however. BLM needs to include all oil and gas development-related infrastructure in its 2,000 acre calculation.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
34.	Martha	Raynolds	—	67039	5	Direct/Indirect Impacts	The exclusion of pipelines (except for piers) and gravel mines from the 2000 acres is ludicrous. These are obviously areas that are not available for any other uses due to oil & gas activities. This glaring error is included in all the Alternatives presented.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Joelle	Buffa	—	67158	3	Direct/Indirect Impacts	Excluding snow or ice roads from counting toward the 2,000 acre maximum surface facility limitation further grossly underestimates the project's impacts on polar bears.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
36.	Withheld	Withheld	—	67539	3	Direct/Indirect Impacts	More than 2000 acres would be impacted. BLM needed to include infrastructure like pipelines and gravel mines and it did not so so	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
37.	Bill	Sherwonit	—	67644	2	Direct/Indirect Impacts	development on the coastal plain limits "surface disturbance" to 2,000 acres. But it's my understanding that BLM has interpreted that limitation to exclude ice roads, many miles of elevated pipelines, gravel mines and other infrastructure. BLM should include all oil and gas development-related infrastructure in its 2,000-acred determination.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
38.	Withheld	Withheld	—	68965	22	Direct/Indirect Impacts	2. The effects analysis in Chapter 3 lacks depth and continuity. Appendix B in Volume 2 of the draft EIS presented the BLM's hypothetical development scenario. This scenario identified five phases in this proposed action; (1) leasing, (2) exploration, (3) development, (4) production, and (5) abandonment and reclamation. Different types of activities will occur during each of these phases, and differences in the temporal overlap and spatial juxtaposition of sites in each of these phases across the Coastal Plain will yield a shifting pattern of effects through time. This potentially very complex pattern of variation is exactly what I assumed the BLM's hypothetical development scenario was meant to address. Amid the resulting "cloud" of potential effects, the hypothetical development scenario would provide a	The organization and approach to analysis in Chapter 3 have been standardized across all resources.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	representative "point" that could be the focus of a standardized analytical approach. This typology of phases and standardized analytical approach for dealing with spatial and temporal variation makes sense and sets up an expectation for readers about the structure and content of the corresponding effects analyses. Similarly, Appendix F lists resource impacts and indicators. Combined with Appendix B, this further refines the reader's expectations about the structure and content of analyses of program effects on resources by identifying resource-specific impact mechanisms and the indicators that will be used to measure relative impacts across action alternatives. Again, this analytical framework is a sensible approach for dealing with the broad uncertainty inherent in a programmatic draft EIS such as this one. The effects analyses in Chapter 3, however, do not fulfill the expectations established by this framework. Execution of the sensible approach intended by appendices B and F is extremely inconsistent. For example, the first resource analysis in Chapter 3 is for Air Quality. Rather than adopt the phases identified in the hypothetical development scenario, the air quality analysis introduces a new typology of phases, including; (1) seismic survey, (2) exploratory drilling, (3) development, and (4) production (pg. 3-13), but omits the important phase (5) abandonment and reclamation (in general, this phase of the program is largely ignored throughout the draft EIS, despite its potential to result in significant impacts). It uses virtually none of the timelines, spatial predictions, or assumptions that are included in the hypothetical development scenario to refine estimates of the magnitude and duration of effects, and makes only one	(see above)

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	reference to the scenario. Actions and impacts presented in Appendix F, section F.4.2 are tracked in the narrative with moderate fidelity, but the analysis includes only one sentence that deals with temporal aspects of impacts (pg. 3-14; Thus, potential emissions in the short term would be less than emissions in the long term, assuming that exploration ultimately led to the buildout of oil and gas facilities as described by the hypothetical development scenario (Appendix B). The next resource analyzed, Acoustic Environment, makes no reference to the hypothetical development scenario, and is written in a way that suggests the authors of this analysis were unaware of the existence of the scenario. Similarly, the analysis of effects to the acoustic environment does not mention important indicators listed in Appendix F, section F.4.3 such as sound intensity index and distance to inaudibility. It's as if each discipline is analyzing their own unique version of the proposed program. This pattern of incomplete fidelity or total disregard for the Appendices B and F continues throughout Chapter 3, leading to an effects analysis that is an incomprehensible hodge-podge, casting doubt on the credibility of the analysis, and thwarting any attempt to integrate effects across resources analyzed - a central role of decision-makers. Chapter 3 needs to be completely revised with a focus on using the hypothetical development scenario in Appendix B and the impacts and indicators in Appendix F as central organizing themes. As suggested in the Introduction to the draft EIS, this is a reasonable approach for a programmatic draft EIS, but to be effective, it must be implemented properly.	(see above)

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39.	Withheld	Withheld	—	68965	23	Direct/Indirect Impacts	The analysis of program effects in Chapter 3 also generally does not consider temporal aspects of effects from the program. Types of effect are described, sometimes the relative magnitudes of effects are estimated, at least qualitatively, but almost no attempt is made to estimate the frequency or duration of effects. Temporal factors strongly influence the potential significance of impacts. The hypothetical development scenario contains sufficient detail to allow reasonable estimates of temporal aspects of impacts. Again, Chapter 3 needs to be revised to incorporate consideration of the frequency and duration of impacts. Temporal aspects of effects are important and should be elaborated whenever possible to inform decision-makers and the public.	The organization and approach to analysis in Chapter 3 have been standardized across all resources, including discussions of frequency or duration of impacts.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Withheld	Withheld	—	68965	29	Direct/Indirect Impacts	5. Accounting for the limit of 2,000 acres of disturbance. Section 20001 of Public Law 115-97 includes the following language: "(3) SURFACE DEVELOPMENT.-In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." The quantitative criterion of 2,000 acres will justifiably be the object of considerable industry interest and public scrutiny. This quantitative criterion is also very amenable to monitoring. While the draft EIS may not be the place for articulating a comprehensive monitoring and compliance plan, I believe it is the place to spell-out, in as much detail as possible, how this 2,000-acre limitation on surface development will be tracked. Transparency about what rules will govern the monitoring and accounting program for this criterion is essential. This information will enable lease applicants to plan accordingly, and will provide environmental interests some assurance that this is a meaningful criterion. Early disclosure of these rules will allow them to be subjected to public comment, refined, and clarified before issuance of a Record of Decision; an approach that will build trust. In contrast, leaving disclosure of the monitoring and accounting rules for surface disturbance to an unspecified later date will foster uncertainty, distrust, and suspicion.	The 2,000-acre facility limit facility limit has been revised to include gravel mines. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
41.	Withheld	Withheld	—	68965	30	Direct/Indirect Impacts	I urge the BLM to include in the revised draft EIS a clear and thorough description of the rules surrounding the 2,000-acre limitation. This description in its entirety should be presented in a single location in Chapter 2, or an	The 2,000-acre facility limit has been revised to include gravel mines. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	appendix, and should at minimum include: *A comprehensive list of program features that will be counted toward the 2,000-acre limit (please see my specific comments below for details). *A clear protocol for field monitoring of the total acreage disturbed at any given time, including a typical annual schedule for monitoring activities, and the parties responsible for completing the monitoring activities and reporting the results. *Description of the reporting process, including public disclosure of validated monitoring results. I recommend a web-based platform, releasing monitoring results on a schedule as close to real-time as possible. *A thorough discussion of the internal controls regarding data quality that will be applied to the monitoring and reporting program. *A thorough discussion of the external controls, including audits and other forms of external oversight that will be implemented. I recommend identifying the specific entities that will be responsible for conducting audits and performing oversight functions. *A clear and complete description of the process for responding to monitoring results that indicate the program has exceeded the 2,000-acre limit. This outcome would be a violation of Public Law 115-97. Public Law 115-97 does not prescribe penalties for violations, making it incumbent on the BLM to articulate how they intend to handle this situation. This process is essential information for all parties interested in the oil and gas program. *A clear protocol for monitoring abandonment and reclamation activities. This should include clear performance standards regarding the ecological function of reclaimed acres that, when achieved, would allow these acres to be deducted from the total of disturbed acres.	ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Withheld	Withheld	—	68965	33	Direct/Indirect Impacts	8. Introduction, Section 1.9.1. The language in PL 115-97 regarding surface development is: (3) SURFACE DEVELOPMENT.-In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases [italics added] under the oil and gas program under this section. Section 1.9.1 of the draft EIS states: The BLM interprets this provision of PL 115-97 as limiting to 2,000 the total number of surface acres of all Federal land across the Coastal Plain, regardless of whether such land is leased, which may be covered by production and support facilities at any given time. Accepting the invitation in the draft EIS to comment on this interpretation, I have to ask, why does the BLM interpret “during the term of the leases” to mean “at any given time”? In my opinion, these do not mean the same thing. BLM’s interpretation appears to allow more surface development than intended by Congress. Please provide and explain the BLM’s rationale underlying their interpretation. Please also specify in detail the level of reclamation, including specific performance measures or metrics, especially regarding re-grading and revegetation, that the BLM will use to determine when a given acre no longer counts toward the total of 2,000 acres under development. Also in this section, BLM excludes gravel mines from consideration as contributing to the 2,000 acre total, offering the analogy that gravel mines are like steel mills in that they simply provide raw materials. This analogy is flawed in that the gravel mines are likely to be located on the Coastal Plain, unlike steel mills.	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit. This limit has been revised to include gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	In the absence of the oil and gas development program, existing gravel mines on the coastal plain would expand at some background rate associated with ongoing activities that require gravel. Any increase in the expansion of existing gravel mines beyond this background rate that can be attributed to development of oil and gas infrastructure, and any new gravel mines that provide material for oil and gas infrastructure can and should be counted against the 2,000 acres of development associated with the oil and gas program.	(see above)
43.	Withheld	Withheld	—	68965	43	Direct/Indirect Impacts	Please be explicit about whether areas disturbed for the purposes of water withdrawal or removal of ice aggregate are included in the 2,000 acre facility limit. In my opinion, these disturbances should be included.	These areas are not covered in the 2,000-acre limit. Per the Tax Act, the limit only applies to areas covered by production and support facilities. Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
44.	Withheld	Withheld	—	68965	64	Direct/Indirect Impacts	The large estimated spatial extent of sand and gravel pits and their lasting effects on Water Resources described in the next section suggest these pits may be among the most environmentally impactful aspects of this program. The analysis of effects presented here, including the estimates of the spatial extent of sand and gravel pits for each action alternative (all exceeding 300 acres), support the inclusion of sand and gravel pits in the 2,000 acre facility limit.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Withheld	Withheld	—	68965	83	Direct/Indirect Impacts	55. Chapter 3; section 3.3.5, page 3-136. Marine Mammals. Similarly, during winter 2000-2001, two females denned successfully within 1,312 feet and 2,625 feet of remediation activities being conducted on Flaxman Island (MacGillivray et al. 2003), located just northwest of the Arctic Refuge boundary. Thank you for including at least one mention of the potential effects associated with the "abandonment and reclamation" phase of the program as described in Appendix B (pg. B-19). This phase of the program is largely ignored throughout the draft EIS, despite its potential to result in significant impacts.	The organization and approach to analysis in Chapter 3 have been standardized across all resources. Chapter 3 has been revised to include discussions of all phases of the leasing program.
46.	Peter	Stern	—	69296	10	Direct/Indirect Impacts	I-6 section 1.9.1 excludes gravel mines from the 2000 acre limitation. It also excludes elevated pipelines that don't touch the surface even though they might impede the movement of animals if they are left too low to the ground. Gravel mines must be included in any remediation requirements.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
47.	Peter	Stern	—	69296	72	Direct/Indirect Impacts	B-21 "Road requirements are somewhat elastic in that operators could route roads through Native or State lands or even build some roadless developments if there were a possibility of the 2,000-acre disturbance cap being exceeded." So this will allow winter and ice roads to be used to exceed the 2000 acre limitation while still impacting ground cover for many years.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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48.	Becky	Long	—	69710	4	Direct/Indirect Impacts	The DEIS interpretation and the tax law of what is surface disturbance is wrong. Ice roads and pads, elevated pipelines and gravel mines are not counted for various reasons. The main reason is that these are not oil and gas facilities. The DEIS interpretation that the 2000 rule is at any given time as quoted on p. 3-221 is wrong and actually goes against the tax law. Appendix B-9 states that if they include the above type development in the 2000 rule then the leasing program would be impracticable. Well, too bad for that. The 2000 acre rule should apply as a total amount for all surface development for all the future leasing in the law. The only conclusion is that leasing surface development will not be limited to 2000 acres. There is no way that it could be followed. The DEIS creative definition of disturbance at any one time is a subversion of the 2000 acre rule.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.
49.	Withheld	Withheld	—	70203	1	Direct/Indirect Impacts	The proposal in this EIS that 2000 acres comprises a temporal occupancy by oil and gas leasing exploration is absurd. The impacts from the proposed activity in this sensitive ecosystem are permanent, not temporal. The impacts are not limited to 1.5 million acres, but extend far beyond.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
50.	Withheld	Withheld	—	70934	1	Direct/Indirect Impacts	Section 1.9.1 - Total acreage. - The exemption of gravel mines, support pads and other infrastructure from the 2000-acre limit is ludicrous. Asserting a temporal component especially without clear and objective criteria for reclamation is also not in keeping with the law or intention of the regulation. A 2000-acre limit has been established for decades and has up until now always been defined and explained as the footprint for development.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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51.	Withheld	Withheld	—	70934	2	Direct/Indirect Impacts	In later sections of this document (eg 3.2) it is indicated that analysis of cumulative impacts are based on 2,000 acres of disturbance. This is erroneous and invalidates these analyses. In all instances the footprint for disturbance should not be measured as 2000 acres. When considering gravel extraction 4,000 is a more accurate estimate of surface disturbance and BLM should reexamine all sections of this document which use 2,000 acres as in calculating impacts.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
52.	Withheld	Withheld	On behalf of 312 scientists	71076	2	Direct/Indirect Impacts	The DEIS does not adequately address how the area to be covered by production and support facilities will be limited to 2,000 acres as required in P.L. 115-97. This is especially important in view of the National Academy of Science/National Research Council1 finding that the impacts of Arctic development extend far beyond the physical footprint of the necessary facilities and infrastructure. The DEIS applies a very narrow interpretation of this limit: e.g., gravel mines, ice roads and elevated pipelines would not count toward the cap, even though such infrastructure is directly related to production and support of an oil and gas program. Moreover, the DEIS would allow more construction beyond 2,000 acres if previously disturbed acres are “reclaimed,” despite a dearth of scientific evidence that reclaimed acres would function in the same way as non-disturbed areas. Nor has the agency explained how it will track and enforce the 2,000-acre limitation on the ground.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. . The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Withheld	Withheld	—	71099	2	Direct/Indirect Impacts	The DEIS is significantly deficient in its analysis and prefaces each modestly assessed impacts section with a statement that the project is a lease program. That is only partly true. Other municipal agencies have had to withdraw similar proposals to sell off public land to a developer because the EIS only examined the sale not the impacts of the project they were expecting to occur on the site, trying to pass the buck to the developer or segment the review. It is well established in state and federal regulations that segmeation is not permitted. Please make sure the NEPA process does not allow this as well and more importantly and timely that the arctic drilling EIS does not segment the review.	Chapter 3 has been revised to include discussions of all phases of the leasing program. All future site-specific oil and gas activities will require a separate NEPA analysis.
54.	Heather	Mirczak	—	71628	2	Direct/Indirect Impacts	I understand that any lease also includes an acreage limit on the surface development. The draft EIS stipulates a 2000 acre limit, however, as written this does not include ice roads, pads, elevated pipelines and gravel mines. This does not compute for me. As an Arctic traveler in both summer and winter, I have seen the remnants of infrastructure from all of these things. This provision seems to greatly expand the acreage that is being exposed and altered by the lease sale. I am concerned that the language also specifies "2000 acres at any given time" which does not limit the structures to a given area but allows for increased development of these structures over time. This means again greater disturbance over a wider expanse of the Refuge.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Jill	Nogi	Environmental Protection Agency	71634	38	Direct/Indirect Impacts	Reclamation According to the DEIS, the BLM has interpreted the Tax Act as providing a temporal limit on surface development, such that "the reclaimed acreage of Federal land formerly containing production and support facilities would no longer count towards the 2,000-acre limit." Revegetation is challenging in arctic environments, due to harsh growing conditions as well as the potential for permafrost degradation. We recommend that the EIS include additional information regarding the reclamation standard that would be applied, and how the BLM would ensure that reclamation was successful prior to authorizing additional land disturbance.	The 2,000-acre facility limit facility limit has been revised to include gravel mines. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
56.	Withheld	Withheld	The Wildlife Society - Alaska Chapter	72005	3	Direct/Indirect Impacts	The DEIS must rigorously describe the 2,000-acre limitation on development of the coastal plain of the Arctic Refuge. The DEIS does not adequately address how the area to be covered by production and support facilities will be limited to 2000 acres as required in P.L. 115-97. This is especially important in view of the NRC's finding that the impacts of Arctic development extend far beyond the physical footprints of the necessary facilities and infrastructure. The DEIS provides a limited interpretation of this restriction, with a number of associated structures (e.g., gravel mines, ice roads and elevated pipelines) not counting toward the cap. Additionally, the DEIS would allow further construction outside the 2000 acres if the original developed areas are reclaimed. However, there is limited evidence of the efficacy of this approach and no clear definition of the standards by which adequate reclamation would be determined based on scientific information.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines, and the rationale as to why certain facilities may not be included. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	10	Direct/Indirect Impacts	The 2017 Tax Cuts and Jobs Act that legalized drilling in the Refuge limits disturbance of land to 2,000 acres; however, the DEIS finds creative and unconvincing ways around this limitation. It does not count seismic exploration, ice roads, elevated pipelines and gravel pit mines as surface disturbance. This calculation is an obvious distortion of reality that must be amended in the final EIS. The final EIS must count the significant surface disturbances of seismic exploration, ice roads, elevated pipelines and gravel pit mines into the total land disturbed. The DEIS also only counts 2,000 acres "at any given time." This would allow for the entirety of the coastal plain to see the impacts of development over time. If congress meant 2,000 acres "at any given time" they would have said so, and the addition of this language is an attempt to override clear limitations placed by congress: it must be removed in the final EIS.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.
58.	Stuart	Pechek	—	72083	1	Direct/Indirect Impacts	I've reviewed the Drat EIS and commend many aspects of it's analysis. However, the oversights I see come from the impact analysis - 3.2.4 Physiography - Affected Environment. Statements surmise that the overall surface disturbance area is approximately 2000 acres, mostly from gravel pads, roads and additional gravel pits. That sounds reasonable. However, as a surveyor who's worked in Prudhoe Bay extensively as well as Kuparuk and Alpine oil fields, I can say this statement does not address the major physiography impact - the feeder oil lines which create a spider-like network in an oil fiield development.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
59.	Withheld	Withheld	—	72125	7	Direct/Indirect Impacts	The DEIS in Chapter 3 repeatedly describes that the, "[i]ssuance of oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would have no direct impacts on the environment because by itself a lease	This EIS analyzes indirect impacts from oil and gas leasing at the programmatic level. While leasing does not result in any on-the-ground impacts, the BLM recognizes there is an irreversible

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	does not authorize any on the ground oil and gas activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to further environmental review and reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease. The impacts of such future exploration and development activities that may occur because of the issuance of leases are considered potential indirect impacts of leasing. Such post-lease activities could include seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain." The above statement is misleading. The BLM does not retain substantial rights allowing it to regulate rights-of-way and easements. The DEIS should have noted that reasonable regulations may not be permitted in some cases, since Section 20001(c)(2) of PL 115-97 mandates that rights-of-way or easements across the Coastal Plain are to be issued with no mention of protecting surface resource values. Selecting any of the DEIS action alternatives would likely lead to the connected action of authorizing rights-of-way or easements. An agency is required to fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development." An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and irretrievable commitment of resources. If BLM is going to make an irretrievable commitment of resources, it cannot defer its site-specific analysis and rely on vague programmatic statements in the draft EIS.	and irretrievable commitment of resources, which is why it analyzes these impacts in the EIS. The hypothetical development scenario addresses rights-of-way (ROWs) at the programmatic level, and surface disturbance from ROWs are included in the 2,000-acre facility limit facility limit(see Section 1.9.1). If a ROW or any other project-specific activity results in surface-disturbing activity, then an additional NEPA analysis is required.

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60.	Withheld	Withheld	—	72125	19	Direct/Indirect Impacts	the length and diameter of elevated pipelines and other structures need to be counted against the 2,000-acre limit since they "cover" an area and degrade wildlife habitat and may affect wildlife movements, which is counter to providing for natural diversity.	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines (see Section 1.9.1). However, the EIS does analyze broader indirect impacts associated with these production and support facilities.
61.	Withheld	Withheld	—	72125	20	Direct/Indirect Impacts	A gravel mine is a facility-a "facility" is something that is "built, installed, or established to serve a particular purpose" and must be considered a facility for the purpose of calculating the acre limit. The BLM needs to explain what it believes is the basis for its authority to allow gravel mining in the Arctic Refuge.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
62.	Withheld	Withheld	—	72125	22	Direct/Indirect Impacts	Interpreting the limitation to allow for additional lands to be developed if other lands are reclaimed means that much more than 2,000 acres of the Coastal Plain would be impacted by oil and gas activities. This is contrary to the Tax Act and cannot be permitted. Two-thousand acres is the maximum cumulative acreage that can be impacted by surface development under the Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.
63.	Withheld	Withheld	—	72125	35	Direct/Indirect Impacts	Roads and Pipelines Comments (Section B.9.3): Gravel roads, gravel mines, and other infrastructure in Arctic environments will cause long-term impacts to the landscape that cannot be easily recovered or restored and will never recover to their original, wilderness and natural diversity state. Production facilities with spider-webs of road-connected drill-pads will kill	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	vegetation, impact permafrost, and spread damaging dust far beyond their physical perimeters, as will other permanent roads and sand and gravel quarries. Gravel roads cause permanent hydrological and surface morphological changes to the landscape, altering permafrost freeze-and-thaw cycles and creating issues related to thermokarst. BLM improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM must consider pipelines as physical barriers for caribou that will alter their migration patterns and cause avoidance during certain points in their lifecycles. BLM is only interpreting the limitation to apply to those lands that are "directly occupied by facilities." In the DEIS, BLM concludes that only 8.4 to 10 acres would be impacted by the vertical supports for elevated pipelines, even though 210 to 250 miles of pipelines would be constructed on the Coastal Plain. Pipelines are unquestionably production and support facilities developed on the surface of the Coastal Plain. As such, all areas impacted by elevated pipelines should count toward the 2,000- acre limitation, including the full length and diameter of the pipelines themselves as well as the vertical supports. Interpreting the limitation to apply to pipelines in this way is consistent with the overarching goal that this provision be a protective measure for the Coastal Plain.	production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities.

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64.	Withheld	Withheld	—	72125	36	Direct/Indirect Impacts	Gravel Mines Comments (Section B.9.3): Gravel mines are inconsistent with the Arctic Refuge fish and wildlife conservation and water purposes and therefore must be greatly limited in extent and location. The 2,000-acre surface disturbance cap purpose is to protect surface resources and gravel mines contribute to natural resource degradation, so for that reason alone they should be counted against the cap.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
65.	Withheld	Withheld	—	73208	1	Direct/Indirect Impacts	PL115-97 loosely defined the 2000-ac limit to surface development, but did not limit it to only the facilities described therein, else they would have clearly stated so. However, BLM further limits the types of facilities and the temporal nature of such facilities so as to make the intent of Congress more "practicable." PL115-97 does not explicitly authorize BLM to amend the definition of this limit for any reason, nor does it explicitly exclude any types of facilities from inclusion. Therefore, the exclusion of certain types of facilities and the temporal interpretation by BLM in this Leasing EIS are unwarranted.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
66.	Withheld	Withheld	—	73208	2	Direct/Indirect Impacts	Gravel pits will be massive scars on the land, with visual impacts from miles away. Wildlife movement across them will be impeded, especially during operations, but also well after, most likely, even after they are reclaimed. Gravel pits must be included in the 2000-ac limit.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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67.	Withheld	Withheld	—	73208	3	Direct/Indirect Impacts	PL115-97 identifies “production and support facilities” in this 2000-ac limit. Although it does not specifically include exploration facilities and activities, they clearly “support” production and development and are, therefore, support facilities to be included in the 2000-ac limit. Without exploration, there would be no development or production. They are essential and they have impacts. Exploration clearly would include the tractor trails left by seismic exploration, many of which remain a visible impact today from exploration in the 1960s through 1980s. And, the leases specifically allow initiation of the exploratory phase of development. Therefore, the 2000-ac limit must include all exploration phase facilities as “support facilities,” including unreclaimed tractor trails, which are equivalent to gravel roads, and ice facilities.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
68.	Withheld	Withheld	—	73208	4	Direct/Indirect Impacts	Pipelines, although generally elevated on piers, will inhibit the movement of wildlife across the Coastal Plain, as they are foreign structures generally avoided by wildlife, and will physically inhibit movement of larger mammals. To include only the part that touches the ground is a ridiculous way to define the impact for purposes of the 2000-ac limit, as it clearly is not realistic interpretation of the resulting impacts they cause. Congress specifically included the pipeline piers, but did not explicitly exclude any part of the pipeline structures from the 2000-ac limit. All pipeline corridors, as defined by the width between the piers, including any associated service roads, and their entire length, must be included in the 2000-ac limit calculation.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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69.	Withheld	Withheld	—	73208	5	Direct/Indirect Impacts	BLM excludes any reclaimed land as exempt from the 2000-ac limit, which appears reasonable. But when is the land truly “reclaimed?” It is reclaimed when it is returned to its original natural state, and not before. Therefore, any land that is under reclamation, post-operational or pending reclamation must also be included in the 2000-ac limit because such land will have impact on wildlife movement and visually, among other impacts.	Until such time as the areas are reclaimed as required by ROP 35, they would still be included in the 2,000-acre limit. Under all alternatives, ROP 35 requires restoration to the land’s previous hydrological, vegetation, and habitat condition.
70.	Withheld	Withheld	—	73208	6	Direct/Indirect Impacts	BLM excludes “facilities constructed of ice or snow” which includes ice roads and pads because they have a “fleeting existence, and thus this aspect of BLM’s interpretation is consistent with the temporal limit intended by Congress.” The only temporal limit Congress imposed was “during the term of the leases” so any ice or snow facilities employed during the term of the leases must be included in the 2000-ac footprint. Further, seismic exploration activities are required to be conducted in winter when the snow protects the tundra, and such activities, including worker camps and supply facilities clearly will inhibit the movement of musk oxen, among other species active in winter. Ice roads and pads will have the same impacts. Since Congress did not exclude snow and ice facilities, which clearly “support” the oil and gas program, they must be included in the 2000-ac footprint.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Katherine	Trisolini	Loyola Law School	74278	3	Direct/Indirect Impacts	The EIS makes that outrageous assumption that Congress' direction to develop an oil and gas leasing program that disturbs a maximum of 2000 surface acres somehow also somehow incorporates authorization to disturb another 300 or more acres with gravel mining. Because the Bureau refuses to include these activities within the 2000 surface acre limit and describes the 300 acres as an "estimate," the DEIS appears to presume that Congress has authorized an unlimited number of acres to be disturbed by gravel mining within this pristine area. (DEIS 3-26). Nothing in the Act provides for this additional surface disturbance. As acknowledged by the DEIS, gravel pits remaining after extraction would typically not be completely backfilled, thus leading to permanent changes on physiography.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
72.	Katherine	Trisolini	Loyola Law School	74278	5	Direct/Indirect Impacts	The Bureau's assumptions regarding gravel mining contradict Congress' limitation on surface disturbance within the pristine area of ANWR. The DEIS attempts to characterize the gravel operations as somehow not part of the production and support facilities that "count" towards the 2000 acre maximum surface coverage. However, this effort seems particularly nonsensical in light of Congress' explicit inclusion of airstrips and pipeline support structures.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Katherine	Trisolini	Loyola Law School	74278	7	Direct/Indirect Impacts	Finally, assuming these operations are permissible, the DEIS does not meaningfully analyze the impacts from gravel mining despite specific projections of both the location and size of mining operations. These impacts are in no way speculative and hence warrant thorough analysis. Gravel mining will significantly exacerbate adverse environmental impacts because it is a noisy, dusty activity that will disturb wildlife, plant habitats, water quality, and air quality, among other things.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Richard	Edwards	—	74281	2	Direct/Indirect Impacts	the document is almost wholly lacking in any useful quantification of the resource impacts of that Hypothetical Development Scenario. The document most often provides only qualitative assessment of resource impacts---with little or no attempt to actually quantify potential impacts in any meaningful way useful to an informed decision --- especially over time. The "appearance of impact quantification" is often provided by inclusion of data tables defining the existing condition---with no actual use of those data in any substantial quantitative analysis of impacts (e.g., Water Resources appendix) or reference to satellite documents to provide assumed weight--and expediency---to the analysis. Mostly qualitative assessments are followed by stock conclusions that "improved technology" and designated best management practices will minimize potential adverse impacts. For example, at page 3-57 we read: "Future mining pads, airstrips, and roads would be designed to account for thermal criteria (minimum thickness to prevent permafrost degradation) and hydrologic criteria to minimize potential impacts on the surrounding area, as discussed in ROPs 23 and 24." Yet, we read in Section 3.7 that "Loss or change in vegetation and wetlands where gravel is placed, regardless of whether it is removed at abandonment" is an irreversible and irretrievable commitment of resources.	The text has been revised in Section 3.7 to reflect accurate "irreversible and irretrievable commitment of resources," acknowledging there is an expectation that some areas would be reclaimed.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	Richard	Edwards	—	74281	6	Direct/Indirect Impacts	The BLM has conveniently excluded gravel mines as not being subject to the 2,000-acre occupation limit---equating them to off-site steel mills. This equation defies even the most basic logic. Gravel/road mix is the primary on-site resource that would enable the proposed level of development to occur in the first place. Without site stabilization by sand/gravel materials---assuming one desires to avoid truly massive impacts to the active soil layer and native vegetation---all site access and activity would be limited to ice roads and pads.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
76.	Richard	Edwards	—	74281	7	Direct/Indirect Impacts	There are, of course, no gravel mines in the No Action alternative. Each of the action alternatives would trigger the development of multiple mine sites for both the construction and maintenance of other production and support facilities---the gravel mines are, in fact, on-site support facilities. The sites would be used for gravel storage and as secondary staging areas---where surface water conditions allow. Likening them to off-site ore deposits and steel mills defies logic. BLM's interpretation fails to acknowledge this basic fact in the process of semantics play over the 2,000- acre occupation definition.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	Richard	Edwards	—	74281	52	Direct/Indirect Impacts	The Draft EIS fails to identify and address the impacts of oil and gas exploration and development on the ability of the U. S. Fish and Wildlife Service to manage the Refuge in concert with its intended purposes. ANICLA provided four purposes that guide management of the Refuge: to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations. In short, USFWS is mandated to provide for the long-term protection of this globally significant landscape. How will the ability of the USFWS to successfully manage the Coastal Plain for these purposes be impacted in both the short and long-term by the proposed activities? The Draft EIS must be revised to adequately address the short and long-term impacts of the proposed activities on USFWS's land management role.is issue.	The USFWS will revise its Arctic National Wildlife Refuge CCP to address the five purposes of the Arctic Refuge and its management strategies.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
78.	Lisa	Baraff	Northern Alaska Environmental Center	74306	15	Direct/Indirect Impacts	Section 20001 of the Tax Cuts and Jobs Act establishing the oil and gas program on the Coastal Plain included the following: "In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." BLM's interpretation of this is faulty, excludes damaging development- related activities, and would allow for acreage in excess of the "up to 2,000 surface acres" authorized in the Tax Act. The DEIS excludes ice roads and pads, elevated pipelines, and gravel mines from its definition of surface disturbance and, therefore, the 2000 acre limit of surface acres outlined in the PL 115-97. BLM states that "inclusion of such facilities would make Congress's clear purpose -establishment of an oil and gas program on the Coastal Plain - impracticable" (Vol. 2, Appendix B-9) suggesting that they conducted their analysis in order to draw the desired conclusion.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines, and the rationale as to why certain facilities may not be included.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	Lisa	Baraff	Northern Alaska Environmental Center	74306	16	Direct/Indirect Impacts	BLM's rationale for excluding gravel mines is that "they supply raw materials for construction of oil and gas facilities but are not themselves oil and gas facilities any more than are mills that supply steel for construction of pipelines and other facilities." This is a false comparison. It might make sense if the gravel were imported into the region as is the steel that is created elsewhere. Gravel mines will be used to supply the gravel that is directly used to build the roads and pads for any oil and gas developments, and are therefore integrally related support facilities, and they will be located within the leasing area. The entire purpose of these gravel mines would be to supply gravel for any oil and gas infrastructure; they would not be developed if there was no oil and gas program. BLM needs to fully account for the total number of acres that could be directly and indirectly impacted from gravel mining used to support the oil and gas program as part of the 2,000 acres.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
80.	Lisa	Baraff	Northern Alaska Environmental Center	74306	17	Direct/Indirect Impacts	BLM is also only counting 2000 acres "at any given time" (Vol. 1, p. 3-221). This means that any land that is "reclaimed" can be deducted from the 2000 acre cap and credited toward more development. This rolling cap interpretation would allow for an expansion of impacts across the Coastal Plain over time. This is based on a faulty assumption that in 10-50 (or even 85 or more years) that an area can be reclaimed.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Lisa	Baraff	Northern Alaska Environmental Center	74306	19	Direct/Indirect Impacts	The DEIS fails to consider what 2,000 acres of development could look like geographically and spatially, and the impacts that could occur depending on the location of activities and development. BLM also failed to explain what method it will use to track and regulate surface development to actually keep any development below this 2,000 cap and what happens when the cap is reached. Does development on leases cease and how will that be ensured?	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan. At the leasing stage, it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
82.	Jason	Paulsen	—	74312	6	Direct/Indirect Impacts	If a warming climate is likely to result in increased wildfire activity in the Arctic, then this DEIS does not adequately quantify the risks that these fire events could pose with respect to oil extraction infrastructure including new pipelines necessary to transport future oil.	Additional planning for wildland fire events would be addressed at a site-specific level.
83.	Jason	Paulsen	—	74312	7	Direct/Indirect Impacts	If the 2,000 acre size limitation does not include features of the built environment including pipelines, then the analysis fails to properly examine the significant negative impacts that development will have upon the experience of a recreational user in the Refuge and Wilderness Areas.	The 2,000-acre facility limit facility limitand associated EIS analysis includes impacts on resources from pipelines and other oil and gas facilities.
84.	Philip	Wight	—	74333	4	Direct/Indirect Impacts	Finally, the DEIS neglects to mention the environmental impacts of the field after oil development is completed. Who will pay for cleanup? How will drilling muds and toxins be removed? What will be the impact of these developments on the long term ecology of the region?	Under all alternatives, ROP 35 requires operators to restore the land's previous hydrological, vegetation, and habitat condition through implementation of an approved reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
85.	Renae	Smith	Counsel for Environmental Protection	74336	6	Direct/Indirect Impacts	BLM fails to provide a reasonable basis for its interpretation that Congress intended the 2,000-acre development limit to apply to surface development at any given moment in time, and not the cumulative total of facilities over the life of the Leasing Program. In effect, BLM's interpretation renders Congress's 2,000-acre limitation meaningless because the cumulative effects of BLM's approach will lead to far more than 2,000 acres of surface disturbance over time. As the U.S. Fish and Wildlife Service has recognized, human disturbances cause long-term damage to the Arctic tundra. 60 Scientists studying the long-term effects of winter seismic trails in the Arctic Refuge concluded that "vehicle traffic over snow-covered tundra can cause long-term changes to plant communities and permafrost stability."61 Notably, this study contradicted predictions that impacts from exploration "would be mainly aesthetic" and would not create long-lasting damage.62	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.
86.	Renae	Smith	Counsel for Environmental Protection	74336	7	Direct/Indirect Impacts	BLM also fails to provide a reasonable basis for interpreting "surface development" to exclude: (1) any surface disturbance "indirectly related to or resulting from" the facilities; (2) ice roads because of their "fleeting existence;" and (3) gravel mines that supply raw materials for construction of oil and gas facilities but are not themselves oil and gas facilities.63 Each of these structures and disturbances are the direct or indirect result of surface development required by or relating to the oil and gas program, and thus, BLM unreasonably and without adequate explanation excludes them from the 2,000-acre surface development limit.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
87.	Renae	Smith	Counsel for Environmental Protection	74336	9	Direct/Indirect Impacts	And BLM's explanation that gravel mines do not constitute surface development because they "supply raw materials for construction of oil and gas facilities" and are thus akin to "mills that supply steel for construction of pipelines and other facilities" ⁶⁵ is utterly illogical when, unlike a steel mill, that likely already exists, the gravel mines will be developed within the Coastal Plain and thus contribute to the overall environmental damage resulting from the proposed action. Indeed, the DEIS acknowledges that gravel mines could cause longer term adverse effects on terrestrial mammals such as habitat loss; habitat alteration from dust, water displacement and hydrological alteration; and displacement from gravel mines due to noise and activity. ⁶⁶ BLM cannot logically exclude such long-term disruption and damage from its surface development acreage calculations.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
88.	Renae	Smith	Counsel for Environmental Protection	74336	12	Direct/Indirect Impacts	The Congressional Budget Office (CBO) estimate that the Leasing Program will generate total revenues of \$2.2 billion, with \$1.1 billion for federal deposit, is based largely on an U.S. Energy Information Administration (U.S. EIA) analysis of how Coastal Plain oil production would impact the energy outlook projections. ⁷³ But the U.S. EIA acknowledges that its projections are "highly uncertain because of several factors that affect the timing and cost of development, little direct knowledge of the resource size and quality that exists in ANWR, and inherent uncertainty about market dynamics." ⁷⁴ BLM fails to analyze or account for these uncertainties or how they affect the Leasing Program's revenue generation potential.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89.	Renae	Smith	Counsel for Environmental Protection	74336	27	Direct/Indirect Impacts	BLM also ignores the possibility that Coastal Plain development and production could drive demand that would not otherwise exist further contributing to greenhouse gas emissions and associated climate change.160	The BLM's greenhouse gas analysis takes into account potential changes in demand (see Section 3.2.1).
90.	Eric	Walsh	Government of Canada	74346	9	Direct/Indirect Impacts	The EIS provides almost no analysis of the transboundary effects that may result from the oil and gas development induced by the lease sales on Canadians and the resources we co-manage with the United States under formal agreements. Because of this omission, Canada finds that the dEIS is fundamentally flawed and requires a Supplemental EIS. The legal requirement to conduct a thorough analysis of transboundary effects flows from the application of the 1997 Council of Environmental Quality (CEQ) guidance ¹² and was described fully in the scoping letter sent in by the Inuvialuit ¹³ and other scoping submissions, and the analysis of that requirement is not reproduced here. In addition, the Inuvialuit scoping letter described several other international agreements that draw attention to the need to carefully consider the impacts of potential development to subsistence users in Canada. Canada articulated our concerns over transboundary impacts in our scoping letter ¹⁴ . Canada notes that although the CEQ document is cited repeatedly in the dEIS, the provisions concerning transboundary analyses are not referenced or assessed in the dEIS.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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91.	Mart	Gallagher	—	75131	1	Direct/Indirect Impacts	The final Tax Act included a 2,000 acre limitation, but BLM excluded infrastructure like pipelines and gravel mines that would create a spider web of impacts across the Coastal Plain. This EIS also ignores the impacts of potential seismic exploration. This limited interpretation of 2,000-acre restriction would allow for more development and greater impacts than Congress voted on in 2017. The BLM needs to include all of the oil and gas development-related infrastructure in calculating the 2,000-acre surface disturbance. All of the action alternatives offer considerably more acreage than is required by the Tax Act. The DEIS gives no reason why it is offering 66 to 100 percent of the 1.56 million-acre Coastal Plain for leasing purposes in the action alternatives, when Congressional direction only stipulated “at least” 400,000 acres be offered—just 25 percent of the total program area. Can you explain this to me?	The 2,000-acre facility limit facility limit has been revised to include gravel mines (see Section 1.9.1). Alternative D2 has been revised to offer 800,000 acres of land available for lease. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analyses would be done for any proposed seismic explorations.
92.	Withheld	Withheld	—	75145	12	Direct/Indirect Impacts	The Tax Act that allowed oil and gas leasing requires that only 2,000 acres of the Coastal Plain be impacted by oil and gas development and production. However, BLM interpreted this restriction too narrowly. BLM did not count acreage affected by pipelines, gravel mines, ice roads, or other industry activity (such as seismic exploration) that the agency recognizes will have significant impacts. Areas that supposedly would be “reclaimed” also are not considered in the 2,000-acre limit. Thus, the cumulative footprint of development would be much greater than the 2,000 acre restriction with far more actual development and greater impacts]. ?The narrow definition of the 2,000 acre limit would permit greater impacts on the Arctic National Wildlife Refuge than allowed in the 2017 Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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93.	Jeannie	Ambrose	—	75238	4	Direct/Indirect Impacts	The 2,000 acres of surface infrastructure permitted at any given time do not include surface disturbances from the construction of temporary winter ice roads, ice pad, and (associated) gravel mines.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
94.	Withheld	Withheld	—	75601	4	Direct/Indirect Impacts	The DEIS interprets that ice roads and pads, elevated pipelines, and gravel mines do NOT count as surface disturbance and, therefore, are not considered in the 2,000 acre limit of surface acres outlined in PL 115-97 (Vol. 2, Appendix B-9). As ice roads, pads, pipelines, and gravel mines are clearly examples of surface disturbance, and because these types of facilities are necessary for oil and gas development, they should count toward the 2,000 acre limit.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
95.	Chandra	Turner	Inuvialuit Game Council	75904	23	Direct/Indirect Impacts	It is our contention, principally for the reasons given in Part 2 of this submission, that the DEIS does not allow us to assess the effect of post-leasing activities on the rights of Canadian Inuvialuit communities as Indigenous peoples under international law and as minorities under international law. While the sections of the DEIS dealing with Subsistence Use and Resources (3.3.3), Sociocultural Systems (3.4.4) and Environmental Justice (3.5.5) touch on these issues the DEIS completely fails (as we have already noted in Part 2) to assess how these post-leasing activities will affect communities beyond the four study communities. As a result, we are not in a position to assess whether these activities will, inter alia, deprive the Inuvialuit of their means of subsistence, or deny them access to the material elements necessary for them to continue to practice their culture and to transmit that culture to subsequent generations.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. Site-specific analyses of subsistence uses and resources, sociocultural systems, and environmental justice, including impacts associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. This EIS makes no decisions on such infrastructure, except to prohibit development in specified areas of particularly high value surface resources under some alternatives.

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96.	Chandra	Turner	Inuvialuit Game Council	75904	50	Direct/Indirect Impacts	the DEIS applies a different standard to the study and consideration of the impact of post-leasing activities on Canadian Indigenous communities than it applies to the impact of these activities on Alaskan Indigenous communities. As a result, it is impossible to draw informed conclusions as to the impact of these activities on Canadian Indigenous communities and specifically Inuvialuit communities that depend upon the Porcupine Caribou Herd (PCH) as well as other shared resources.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. Site-specific analyses of subsistence uses and resources, sociocultural systems, and environmental justice, including impacts associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97.	Withheld	Withheld	—	77891	7	Direct/Indirect Impacts	he Tax Act that allowed oil and gas leasing requires that only 2,000 acres of the Coastal Plain be impacted by oil and gas development and production. This restriction has been interpreted too narrowly, and BLM did not count acreage affected by pipelines, gravel mines, ice roads, or other industry activity (such as seismic exploration) that the agency recognizes will have significant impacts. Areas that supposedly would be “reclaimed” also are not considered in the 2,000-acre limit. Thus, the cumulative footprint of development would be much greater than the 2,000 acre restriction with far more actual development and greater impacts. The negative repercussions of allowing oil and gas into the ANWR are far reaching and irreversibly destructive. The DEIS also failed to consider proposed seismic surveys, failed to identify the economic value of the Arctic Refuge and the invaluable ecosystem services it provides, failed to offer effective mitigation and climate impacts, and lacks scientific integrity. Although the potential harm these actions would cause is acknowledged in some instances, the DEIS fails to adequately note and address too many aspects. BLM recognized that the ecological value of this refuge would be harmed by oil and gas leasing, but it did not conduct an economic analysis to quantify or identify these values or impacts. The DEIS failed to include an economic projection of revenue from lease sales and failed to assess the immense value of wilderness and Refuge lands to air and water quality, wildlife, scientific inquiry, human well-being, and America’s natural and cultural heritage.	The 2,000-acre facility limit has been revised to include gravel mines (see Section 1.9.1). Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analyses would be done for any proposed seismic explorations. Additionally, the Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

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98.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	12	Direct/Indirect Impacts	There are contradictory statements in the Draft EIS regarding seismic testing (see 3-110: „Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales” vs. 3-120: „Alternative D would close 476,600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area, with potential impacts on terrestrial mammals, as described above, such as destruction of under-snow small mammal habitat, disturbance of denning mammals, crushing of forage species, alteration of snowmelt timing.”).	Both statements are accurate. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analyses would be done for any proposed seismic explorations.
99.	Withheld	Withheld	—	79888	5	Direct/Indirect Impacts	False Limit on Developed AcreageThe Tax Act that allowed oil and gas leasing requires that only 2,000 acres of the Coastal Plainbe impacted by oil and gas development and production. However, BLM interpreted thisrestriction too narrowly. BLM did not count acreage affected by pipelines, gravel mines, iceroads, or other industry activity (such as seismic exploration) that the agency recognizes willhave significant impacts. Areas that supposedly would be “reclaimed” also are not considered inthe 2,000-acre limit. Thus, the cumulative footprint of development would be much greater thanthe 2,000 acre restriction with far more actual development and greater impacts]. ?The narrowdefinition of the 2,000 acre limit would permit greater impacts on the Arctic NationalWildlife Refuge than allowed in the 2017 Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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100.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	3	Direct/Indirect Impacts	Congress intended the 2,000 surface acre limit to apply only to leased areas. As noted above, the Tax Act requires BLM to authorize "up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities"36 In describing how it will apply this limitation, BLM interprets the 2,000 surface acre limit to include production and support facilities on both leased lands and ROWs and easements located on nonleased lands.37 BLM provides little explanation for this interpretation, stating only that the Tax Act provides for the issuance of ROWs and easements, pursuant to which production and support facilities may be constructed.38 These are, however, distinct and separate statutory provisions addressing independent mandatory requirements for execution of the oil and gas program. First, with respect to ROWs and easements, the language of the Tax Act clearly directs that "[t]he Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section."39 The legislation at subsection (c)(3) separately addresses surface occupancy for the separate purposes of "production and support facilities"-which are not within ROWs or easements. This plain statutory language is confirmed by the Joint Explanatory Statement of the Committee of Conference,40 which makes clear that Congress did not intend for facilities on ROWs or easements to count toward the 2,000-acre limitation: 36 Id. § 20001(c)(3). 37 DEIS at 1-6. 38 Id. 39 Pub. L. No. 115-97, § 20001(c)(2) (emphases added). 40 A joint explanatory statement is the most reliable piece of legislative history in ascertaining congressional intent. See Richard J. McKinney & Ellen A.	The BLM's interpretation of the Tax Act includes surface disturbance related to ROWs in the 2,000-acre limit definition (see Section 1.9.1).

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100. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Sweet, Federal Legislative History Research: A Practitioner's Guide to Compiling the Documents and Sifting for Legislative Intent, https://www.llsdc.org/federal-legislative-history-guide (last revised July 2015) ("in a legislative history of a U.S. public law, the greatest weight is usually accorded to the joint explanatory statement in a bill's conference report"). Ms. Nicole Hayes March 13, 2019 Page 14 of 36 14 99959215.12 0078439-00052 The legislation directs the Secretary to issue any necessary rightsof-way or easements across the Coastal Plain for the exploration, development, production, or transportation associated with the oil and gas program. Additionally, the section authorizes the development of up to 2,000 surface acres of federal land on the Coastal Plain.[41] This statement plainly shows that, through the Tax Act, Congress directed BLM to allow development of up to 2,000 surface acres of federal lands in addition to-not inclusive of-any federal lands subject to ROWs or easements.42 The FEIS must be modified accordingly, and the Coastal Plain oil and gas lease program should provide for the development of up to 2,000 surface acres of federal land, not including ROWs or easements.	(see above)
101.	Alyson	Pytte	—	80763	1	Direct/Indirect Impacts	I also believe that the draft EIS is inadequate in its current form and must be reformulated to address additional issues: (1) It allows companies to obtain waivers, exceptions, and modifications to infrastructure "requirements," leaving too much doubt about what the actual impacts of development will be. Without knowing actual impacts, it is impossible to meaningfully comment. Please issue an EIS that addresses the actual, rather than possible, scope of development. (2) It defines "surface disturbance" too narrowly, to exclude all kinds of	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis,

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101. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	development (ice roads, pipelines, gravel mines, etc.) All oil and gas development-related infrastructure should be included in the 2,000-acre calculation.	and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Withheld	Withheld	—	80930	7	Direct/Indirect Impacts	The Tax Cuts and Jobs Act of 2017 limited development to 2,000 acres on the Coastal Plain. The DEIS omits ice roads and pads, elevated pipelines, and gravel mines from surface disturbance, although these structures would destroy habitat as thoroughly as drilling structures.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
103.	Rob	Cadmus	—	80946	2	Direct/Indirect Impacts	The DEIS needs to count ice roads and pads, elevated pipelines, and gravel mines as surface disturbance. These surface developments contribute to the 2,000 acre limit of surface acres outlined in the PL 115-97	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines, and the rationale as to why certain facilities may not be included.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
104.	Withheld	Withheld	World Wildlife Fund	81184	7	Direct/Indirect Impacts	The draft EIS fails to analyze the impacts of habitat fragmentation from industrial activities on the Southern Beaufort Sea polar bear subpopulation. In Appendix B, the draft EIS describes the expansive industrialization of the Coastal Plain as a Reasonably Foreseeable Development scenario. This scenario assumes central processing facilities (CPF), each of which would include oil pipeline connections to the Trans-Alaska Pipeline, water and electricity pipelines totalling hundreds of miles, barge landings, staging pads, seawater treatment plants located along the coastline, a generator, airstrip, storage tanks, a communications center, waste treatment units, and maintenance shop, as well as living quarters and offices. Hundreds of miles of gravel roads, and undisclosed miles of ice roads, would be constructed, and gravel mines would unearth hundreds of additional acres. The BLM's draft EIS fails to take a hard look at the enormous imposition of this industrial infrastructure and these associated activities on critical habitat for the Southern Beaufort Sea polar bears, and provides no evidence to support its conclusion that the impacts will be minimal. The BLM must revise the draft EIS to assess the impacts of habitat fragmentation from industrial expansion on the movements, behaviors, health, and distribution of Southern Beaufort Sea polar bears, including impacts to Southern Beaufort Sea polar bears from potential increases in human-bear conflict resulting from the increased likelihood of human-bear interaction under such scenarios.	Section 3.3.5 pertaining to polar bears describes in detail the population status of the SBS stock and the current and likely direct, indirect, and cumulative impacts on their habitats, behavior, and demography. Post-leasing activities in the program area will require new ITRs and an associated biological assessment and biological opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	Withheld	Withheld	—	81307	3	Direct/Indirect Impacts	From the Tax Act: Title II Section 200001 (c) (3) SURFACE DEVELOPMENT.—In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section. This clearly authorizes “covering” up to 2000 acres, period. No more. The “at any given time” interpretation that BLM suggests is contrary to all that has gone before, is contrary to congressional intent, is contrary to the plain language reading of (c) (3) above, and would render the 2000 acre restriction meaningless. BLM apparently intends the “at any given time” interpretation to allow “covering” virtually all of the federal land within the Coastal Plain, with repeating a cycle of “covering,” “reclaiming,” and “covering” over and over.. There are at least two major problems with this interpretation. First, the BLM’s interpretation would render the 2000 acre restriction meaningless. If BLM’s interpretation was put into effect, the entire acreage of Federal land on the Coastal Plain could be “covered.” If this were the case, why have the restriction at all?	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
106.	Withheld	Withheld	—	81307	4	Direct/Indirect Impacts	In addition, the DEIS does not adequately address the question of accounting for or keeping track of acreage that is to be counted against the 2000 acre cap as such acreage is “covered.” This is necessary to ensure that the 2000 limit is not exceeded. The DEIS also does not discuss or suggest a system to monitor the amount of “covered” acreage as it grows to the 2000 acre limit. And the DEIS does not discuss or suggest any enforcement mechanisms.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
107.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	9	Direct/Indirect Impacts	The second key assumption by BLM is that the development footprint in ANWR will not exceed 2000 acres. However, Sec 20001 of PL 115-97 specifies that 2000 acres of surface development are permitted 'at any given time'. This caveat suggests that there will likely be a larger footprint if old sites are 'reclaimed'. Reclamation standards, however, were not specified. Given the low productivity of the Arctic landscape, it is unlikely that reclamation will be effective enough within the lifetime of the oil field (10 - 50 years, pg. B-18). Therefore, we expect that far more than 2000 acres will be disturbed over the lifetime of the oil field. Also, BLM did not include gravel pits within their interpretation of "production and support facilities". Gravel pits will be essential to build all the roads, airstrips and pads that will be necessary within the proposed oil field. The draft EIS estimates nearly 13 million yd3 of gravel could be required for construction and that 320 acres of surface disturbance could result from gravel mines.	The 2,000-acre facility limit has been revised to include gravel mines. As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
108.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	109	Direct/Indirect Impacts	The Tax Cuts and Jobs Act of 2017 ("Tax Act") provides: In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section.75 75 Pub. L. No. 115-97, 131 Stat. 2054. BLM's narrow interpretation of the surface facility limitation fails to consider serious impacts associated with potential development. BLM excludes, for example, significant surface-disturbing activities such as gravel mines. BLM also imposes a temporal limit that undermines the purpose of the surface facility limitation. Because BLM interprets the 2,000-acre limitation as limiting the number of acres covered by production or support facilities "at any given time," reclaimed acres that previously contained production and support facilities no longer count towards the 2,000-acre limit. (DEIS, at B-9). This flawed interpretation is contrary to the Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Additionally, as stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
109.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	110	Direct/Indirect Impacts	Acres Included. The DEIS interprets the 2,000-acre limitation to "refer to acres of land directly occupied by facilities that are primarily used for development, production, and transportation of oil and gas." (DEIS, at B-9). This includes surface acres that are covered by gravel upon which these facilities are built or surface acres that are directly touched by these facilities without gravel between them and the tundra. The DEIS specifically mentions: gravel pads for wells and production/processing facilities; gravel pads from pumps or compressor stations; gravel airstrips and roads; gravel berms; and piers anchored in the tundra for the support of pipelines. (DEIS, at B-9). BLM fails to clarify whether the acres are "gravel surface acres" as measured at the top of gravel roads and pads or "tundra covered acres" as measured at the toe of the slope of gravel fill areas.	The 2,000-acre facility limit has been revised to include gravel mines (see Section 1.9.1). This includes all surface acres of disturbance, which includes toe-to-toe of roads.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
110.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	111	Direct/Indirect Impacts	Acres Excluded. The DEIS specifies three exclusions to the 2,000-acre limitations. First, the DEIS excludes ice or snow roads and pads because they have a fleeting existence. (DEIS, at B-9). Second, BLM excludes pipeline infrastructure that does not touch the land surface because the Tax Act only mentions pipeline support "piers" and is silent on the elevated pipeline itself between such supports. (DEIS, at B-9). The BLM fails to recognize that elevated pipelines over the tundra can cause surface disturbances, which is what the surface development cap is meant to limit. Surface disturbances are especially significant when multiple pipelines are positioned together in an elevated rack. This pipeline configuration significantly impacts the tundra below due to changes in snow accumulation depths, surface drainage characteristics, wind velocities, and sunlight penetration with resulting changes in habitat and wildlife access. (See Figure 11).Figure 11. Extensive pipe racks which in aggregate create surface disturbance. This type of design significantly impacts the tundra below the pipes due to changes in snow accumulation depths, surface drainage characteristic, wind velocities, and sunlight penetration with resulting changes in habitat and wildlife access.	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities. Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
111.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	113	Direct/Indirect Impacts	Third, the DEIS excludes gravel mines because, like mills that supply steel for pipelines, they are not themselves oil and gas facilities. (DEIS, at B-9). The BLM, however, fails to recognize that gravel mines cause significant direct and indirect surface disturbance which is what the surface development cap is meant to limit. (See Figure 12). And the BLM fails to consistently apply its rationale for excluding gravel mines. For example, airstrips are not themselves oil and gas facilities yet they are included in the cap.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
112.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	114	Direct/Indirect Impacts	Gravel mining has very serious impacts that BLM fails to consider in the DEIS. Gravel extraction is generally done in large, open pit mines typically located away from major streams and lakes. It is not clear how such mines could be located in a way that protects the sensitive wildlife and biological resources of the Coastal Plain. Open pit mines require extensive overburden removal. For example, over 50 feet of vegetation and soil needed to be excavated to reach suitable gravel in the mines created for Kuparuk. ⁷⁶ The resulting overburden stockpile disturbs tundra, and the gravel pit itself causes permanent changes to the area's thermal regime due to "thaw bulbs" forming in the permafrost around the unfrozen water during flooding. ⁷⁷ Indirect effects such as these have led some researchers to estimate that a one acre (0.4 ha) gravel pit may impact as much as twenty-five acres surrounding the site. ⁷⁸	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
113.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	116	Direct/Indirect Impacts	Despite recognizing the impacts to areas surrounding gravel mines, the BLM makes no attempt to quantify that disturbance. The BLM only acknowledges the direct footprint of mining itself as being approximately 308-315 acres. (DEIS, at 3-50). The BLM does not consider the impacts to the sensitive ecosystems surrounding these mines. Additionally, the DEIS states that multiple material sources are expected to be used. Yet the DEIS does not analyze impacts from multiple gravel mines, which would have a much greater impact on the Coastal Plain than a single mine. There are also likely to be other significant impacts to the surrounding area, such as noise impacts, that have not been fully accounted for in the DEIS.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
114.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	117	Direct/Indirect Impacts	Acres Overlooked. The DEIS also completely fails to account for the following surface development footprints: 1. Non-pipeline facilities such as buildings constructed on piers elevated over the tundra and without a gravel pad beneath. This type of design significantly impacts the tundra below the facilities due to changes in snow accumulation depths, surface drainage characteristics, wind velocities, and sunlight penetration with resulting changes in habitat and wildlife access. (See Figure 13). 2. Other structures directly in contact with the land surface, including: snow fences, power lines, telecom towers, bridge abutments, and pilings. 3. Other gravel fill footprints not specifically mentioned as included or excluded, including: construction equipment storage and materials laydown pads, ancillary gravel mining areas for gravel sorting, gravel pile storage, overburden storage, and drilling waste grind and inject well and associated facilities. 4. Expanding gravel road and pad surface areas due to maintenance practices. (See Figure 14).	The BLM's hypothetical development scenario (Appendix B) does not foresee the use of pile-supported facilities besides pipelines. The definition in Section 1.9.1 interprets the types of production and support facilities that will count toward the 2,000-acre limit as "any type of gravel or other fill which touches the land's surface." Any examples given are not intended to be exclusive.
115.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	130	Direct/Indirect Impacts	As shown, acres required for well pads will be reduced 66% across the scenarios due to technological advancements, but total surface acres are reduced only 30% over the forward-looking time frame (or only 25% if a 300-acre gravel mine is included in each scenario). By focusing on one aspect of development, well pads, and excluding infrastructure requirements for full development, the DEIS fails to realistically portray the impact of technological advancements on required surface acres.	Alternative D2 has been revised to offer 800,000 acres of land for leasing. Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
116.	Withheld	Withheld	—	82848	1	Direct/Indirect Impacts	I am extremely concerned that the 2,000 acres surface impact limit described in the EIS does not include the footprint of gravel mines used for development of the region. The creation of gravel mines has the effect of completely denuding the landscape of vegetation, effectively removing habitat for all animals that were using it. While the EIS describes a process of site restoration, restoration of gravel mines does not actually create a site that returns to its original state, with original geophysical structure and vegetation. As gravel mines constitute an irreversible change to the landscape, I believe that it is most appropriate to consider any gravel mines to contribute to the 2,000 acres surface impact limit. I am extremely concerned that the EIS seems to not include gravel pits (as well as other infrastructure such as ice roads and elevated oil pipelines) within the acreage limit, especially because this conclusion seems to be based not on best management principles, but on the pressure for oil development created PL 115-97. From the draft EIS these infrastructure elements are excluded because ""inclusion of such facilities would make Congress's clear purpose – establishment of an oil and gas program on the Coastal Plain – impracticable." This is a clear example of how this EIS is written to support a particular end goal- development of the oil fields- rather than being what it should be- a balanced analysis of options for the Refuge.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
117.	Ruth	Wood	—	83199	4	Direct/Indirect Impacts	BLM chooses to interpret this provision such that more development, not less, is allowed. Snow and ice roads are exempt, but when the snow and ice melt, the impact of the road is still there. Comment #1 on Draft Coastal Plain Oil and Gas Leasing Program EIS Page 3 of 3 From Ruth D. Wood, Talkeetna, Alaska 99676 March 8, 2019 They should not be exempt. Elevated pipe lines are exempt because they do not touch the surface. That makes no sense whatsoever. It isn't only the impact on the ground that is important, it is the impact on fish and wildlife, and elevated pipe lines in the calving grounds will have a serious negative impact on calf survival. Furthermore, elevated pipe lines have the potential of interfering with both subsistence and recreational use of the Refuge. Therefore, elevated pipe lines should not be exempted from the 2000 footprint, and the cumulative effect of these pipe lines on subsistence and recreational users needs to be addressed. BLM is making some assumptions that once something is no longer in use or the lease expires, it no longer counts as part of the 2000 footprint. The legislation didn't say that, but BLM assumes it. As long as the structure is there or for as long as any evidence of its having been there exists, it must count. A pipe line that's not being used, but has not been removed and the area restored to its pre-drilling state, most definitely should be included in the 2000 footprint. Moreover, it is not clear that there would be any enforcement of a 2,000-acre limit or consequence for exceeding the total.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre facility limit, which now includes gravel mines. As noted under ROP 40i, the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
118.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	28	Direct/Indirect Impacts	BLM should remain mindful of the benefits of gravel mine sites within an active floodplain and revise ROP 24 accordingly. ASRC oversees the Colville River Mine site and has decades-long experience working with operators, the NSB, USACE, Native community, and State of Alaska in gravel mine resources. This includes the long-term observations of post-mined sites, which become habitat creation sites after reclamation, including valuable habitat for special species like Eiders as well as subsistence habitat. Gravel has also been excavated twice from private land within the Coastal Plain. Gravel sourced from the Kaktovik sites were used in the relocation of Kaktovik and the sites have since been rehabilitated; this should be included in the EIS.	The BLM recognizes it is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed through NEPA for site-specific impacts.
119.	Henrik	Kulmala	—	83333	2	Direct/Indirect Impacts	easements between buildings, ice roads, runways, and required spaces between structures should all count toward the acreage being used. It is not the size of the supports or the structure alone which takes up the space and denies animals access, but also the walkways, paths, and ice roads. Related structures need to be counted as a unit, not as individual structures for the purpose of assessing their footprint. Ice roads must count against the total, as otherwise they are likely to propagate as being uncounted.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines. Section 20001(c)(3) of the Tax Act only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
120.	Henrik	Kulmala	—	83333	3	Direct/Indirect Impacts	The nature of longterm facilities, such as those used to store oil or gas prior to shipment, needs to be approved and plans prepared for their removal and the restoration of the area once drilling activity is finished. There can be no long period of inactivity or hibernation used as a pretext to abandon facilities. All structures, facilities, erections, and roads must be removed to place the land into as close to pre-encroachment condition as possible, or the lands still counts as being part of the 2000 acres and no further site may be used unless authorized by public law.3	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
121.	Withheld	Withheld	The Wildlife Society - Alaska Chapter	83694	3	Direct/Indirect Impacts	Based on limited knowledge and understanding of the cumulative effects of oil and gas exploration and development on Alaska's North Slope, and the difficulty of accurately predicting the timing or extent of potential development scenarios, it is challenging to quantitatively predict the long-term, cumulative effects on the wildlife and ecosystem processes of the Arctic Refuge's 1002 Area. Thus, it is unlikely that a mitigation plan could be developed with any degree of certainty.	Monitoring plans will be tailored to the specific location of development and resources or activity being monitored.
122.	Robin	Stebbins	—	83751	2	Direct/Indirect Impacts	PL 115-97 constrains surface development for production and support facilities to 2,000 acres. The BLM illogically interprets gravel mines as supplying raw materials, but doesn't apply the same logic to desalination plants.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
123.	Robin	Stebbins	—	83751	10	Direct/Indirect Impacts	If gas leasing comes later, as hypothesized, then the entire lifetime of the development is extended, and the plan for progressive closing of facilities falls apart. The first developments are extended to support gas production, and hence not recovered. Will the later developments be delayed to preserve the 2,000 acre limit?	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
124.	Withheld	Withheld	—	84578	4	Direct/Indirect Impacts	The Tax Law stipulates a 2000-acre surface development limit on the Coastal Plain. The DEIS interprets that ice roads and pads, elevated pipelines, and gravel mines do NOT count as surface disturbance and, therefore, are not considered in the 2,000-acre limit. BLM states that “inclusion of such facilities would make Congress’s clear purpose—establishment of an oil and gas program on the Coastal Plain—impracticable.” Further, they count gravel mines as infrastructure that “supply raw materials for construction of oil and gas facilities but are not themselves oil and gas facilities.” BLM is also only counting 2000 acres “at any given time” which means that any land that is “reclaimed” can be deducted from the 2000-acre cap and credited toward more development. This approach would allow for the entirety of the coastal plain to see the impacts of development over time.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines. As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit.
125.	Withheld	Withheld	WWF-Canada	85059	21	Direct/Indirect Impacts	Increased vessel-traffic due to increased shipping associated with the proposed oil and gas development of the Coastal Plain will have adverse impacts across this ecologically sensitive Arctic marine ecosystem that serves as key habitat for many transboundary marine mammals, fish, and birds. Despite the tremendous global importance of the Arctic seas as habitat for wildlife, BLM’s draft EIS narrows the scope of impacts inappropriately and fails to adequately describe shipping activities associated with the proposed Coastal Plain oil and gas lease sales, including various alternatives, near the project area and along the marine barge route.	Where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts from marine vessel traffic cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario (Appendix B).

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
126.	Withheld	Withheld	WWF-Canada	85059	22	Direct/Indirect Impacts	The BLM's draft EIS improperly limits its shipping discussion to the program area, which is much smaller than the area that will experience effects from the proposed development. While the program area encompasses the federal lands and waters of the Coastal Plain within the Arctic Refuge and includes approximately 125 miles of coastline from the Staines River to the Beaufort Lagoon, shipping activities connected with the proposed action will take place, and their impacts will be felt, along the entire 1,600-nautical mile (nm) marine barge route from Dutch Harbor to Kaktovik, Alaska.	The marine vessel route to Dutch Harbor is included as part of the hypothetical development scenario (Appendix B), and is analyzed in the EIS.
127.	Withheld	Withheld	WWF-Canada	85059	23	Direct/Indirect Impacts	Moreover, the draft EIS includes virtually no description of the nature and extent of shipping activity. There is no clear discussion of what kinds of vessels will be used, how many vessel transits are expected, what cargo and materials they will carry, or how fast they are expected to travel. The limited information provided is scattered throughout the draft EIS, and it is misleading in suggesting that shipping traffic will be limited to two barge convoys per year. Indeed, in the absence of any road, or proposal for a road, connecting Kaktovik and Deadhorse, it is clear that the vast majority of project supplies and materials, including bulk fuel and hazardous materials, will need to be shipped to the site.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
128.	George	Matz	—	86074	1	Direct/Indirect Impacts	I think a fatal flaw in the Coastal Plain Oil and Gas Programing EIS is that it while it acknowledges the need to “minimize adverse impacts” from oil and gas development on the Coastal Plain, it provides no standard as to what “minimize” actually means. Without a standard that is consistently applied, we have no idea as to whether “minimize” means no net loss of resources (other than oil and gas) that might potentially be impacted by development, or something more discretionary that might not be anything more than window dressing that in effect minimizes cost to the resource developer. Furthermore, without clearly specified mitigation standards we have no idea as to who BLM intends to serve first; the resource developer or protection of resources other than oil and gas and respective resource users.	To “minimize” an impact is defined in the glossary under the term “mitigation.”
129.	Elizabeth	Ballard	—	90951	19	Direct/Indirect Impacts	The mitigation measures to address impacts to shorebirds in river deltas are inadequate and arbitrary. ³³ The DEIS fails to analyze impacts to shorebirds in river deltas and the mitigation measure will not address these impacts.	Text has been added; see Section 3.3.4 for discussion of impacts on shorebirds, including in river deltas.
130.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	2	Direct/Indirect Impacts	did not include the acreage that would be affected by pipelines, gravel mines, ice roads, and other industrial activity, such as seismic exploration, that the agency recognized will have significant impacts. Areas that supposedly would be “reclaimed” also were excluded from the 2,000- acre limit. Thus, the total footprint of development and the resultant impacts on the Coastal Plain would be far greater than the 2,000 acres allowed under the Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. . The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
131.	Withheld	Withheld	—	92034	4	Direct/Indirect Impacts	The DEIS is deficient both legally and substantively. It failed to include: the required analyses, the necessary mitigation measures and alternatives necessary to protect the resources mandated by the established purposes of the Arctic National Wildlife Refuge. BLM must thoroughly and objectively analyze the 680,000 public comments submitted during the scoping process (which ended in June, 2018), carefully consider the concerns expressed by the Gwich'in Nation that will be adversely impacted by the proposed drilling, and conduct the necessary analyses to understand the impacts of oil and gas leasing in order to comply with federal and international legal obligations.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to the Final EIS. All comments received during scoping were reviewed and considered during the development of the Draft EIS; the Scoping Report is available online on the project website.
132.	Withheld	Withheld	—	92034	11	Direct/Indirect Impacts	The Tax Act that allowed oil and gas leasing requires that only 2,000 acres of the Coastal Plain be impacted by oil and gas development and production. However, BLM interpreted this restriction too narrowly. BLM did not count acreage affected by pipelines, gravel mines, ice roads, or other industry activity (such as seismic exploration) that the agency recognizes will have significant impacts. Areas that supposedly would be "reclaimed" also are not considered in the 2,000-acre limit. Thus, the cumulative footprint of development would be much greater than the 2,000 acre restriction with far more actual development and greater impacts]. The narrow definition of the 2,000 acre limit would permit greater impacts on the Arctic National Wildlife Refuge than allowed in the 2017 Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Withheld	Withheld	—	92095	4	Direct/Indirect Impacts	The Tax Act that allowed oil and gas leasing requires that only 2,000 acres of the Coastal Plain be impacted by oil and gas development and production. However, BLM interpreted this restriction too narrowly. BLM did not count acreage affected by pipelines, gravel mines, ice roads, or other industry activity (such as seismic exploration) that the agency recognizes will have significant impacts. Areas that supposedly would be “reclaimed” also are not considered in the 2,000-acre limit. Thus, the cumulative footprint of development would be much greater than the 2,000 acre restriction with far more actual development and greater impacts. The narrow definition of the 2,000 acre limit would permit greater impacts on the Arctic National Wildlife Refuge than allowed in the 2017 Tax Act.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
134.	Ruth	Wood	—	92475	9	Direct/Indirect Impacts	elevated pipe lines should not be exempted from the 2000 footprint, and the cumulative effect of these pipe lines on subsistence and recreational users needs to be addressed	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135.	Ruth	Wood	—	92475	10	Direct/Indirect Impacts	BLM is making some assumptions that once something is no longer in use or the lease expires, it no longer counts as part of the 2000 footprint. The legislation didn't say that, but BLM assumes it. As long as the structure is there or for as long as any evidence of its having been there exists, it must count. A pipe line that's not being used, but has not been removed and the area restored to its pre-drilling state, most definitely should be included in the 2000 footprint. Moreover, it is not clear that there would be any enforcement of a 2,000-acre limit or consequence for exceeding the total.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. Additionally, as noted under ROP 40i, the BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.
136.	Withheld	Withheld	Government of the Northwest Territories	92862	20	Direct/Indirect Impacts	The GNWT recommends federal land formerly containing production and support facilities should continue to count towards the 2,000 acre limit of surface disturbance until the end objective of requirement/standard of ROP 35 is met. That is, federal land that was used for oil and gas infrastructure will continue to count towards the 2,000 acre limit of surface disturbance until restoration of the ecosystem function (or the more stringent requirement under Alternative D that also includes the meeting the minimal standards to restore general wilderness characteristics).	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
137.	Withheld	Withheld	Government of the Northwest Territories	92862	22	Direct/Indirect Impacts	The GNWT recommends the BLM include the entire building footprint in the calculation of the acres of surface disturbance that will count towards the 2,000 acres surface facility limit, regardless of whether the building is built on raised pilings.	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
138.	Withheld	Withheld	Government of the Northwest Territories	92862	23	Direct/Indirect Impacts	The GNWT recommends the BLM provide for review a comprehensive list of activities that will count towards the calculation of a 2,000 acre surface facility limit.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
139.	Withheld	Withheld	Government of the Northwest Territories	92862	26	Direct/Indirect Impacts	Whether or not BLM's interpretation of the 2,000 acre surface occupancy limit in the Tax Act is accurate, the EIS fails to account for two key points within the development program in basing all of its alternatives on this expansive interpretation. First, unlike the 800,000 acre program limit, this is a maximum, and not a minimum; this allows an array of options to be considered to mitigate this program's significant impact on the environment of the area.	Given that Congress explicitly established this protective facility acreage limit, any interpretation by the BLM to reduce the limit for a given alternative would be inconsistent with the Tax Act.
140.	Withheld	Withheld	Government of the Northwest Territories	92862	27	Direct/Indirect Impacts	Second, it fails to account for the long-term recovery of reclaimed land. The program is occurring in an area still recognized for its ecological and cultural importance. The relevant provisions of the Tax Act and the leasing program must also be interpreted in light of NEPA's mandate to mitigate significant impacts; an expansion of interpretation of the 2,000 acre surface occupancy limit would greatly expand the impact of the program. This is particularly true because surface occupancy is the key aspect of the drilling program that causes/drives the program's environmental impacts, especially those on the protected species the land was originally set aside to protect. As a result, it is the aspect of the program that most warrants mitigation and/or design aspects that lessen its impact.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. . The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
141.	Withheld	Withheld	Government of the Northwest Territories	92862	28	Direct/Indirect Impacts	The GNWT recommends gravel mines be included in a compressive list of activities that will count towards the calculation of a 2,000 acre surface facility limit.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
142.	Withheld	Withheld	Government of the Northwest Territories	92862	29	Direct/Indirect Impacts	While the draft EIS acknowledges potential impacts of pipelines on wildlife and provides some mitigations in the lease stipulations (e.g. elevated pipelines separated from roads by 500 feet), the actual pipeline is not included in the calculation of the project footprint. Only including the vertical support member (VSM) in the footprint of the development renders it difficult to determine the overall impact of the pipelines to wildlife of the area. Recommendation The GNWT recommends permanent pipelines be included in the calculation of surface disturbance footprint (i.e. count towards the allowable disturbance area). The GNWT also recommends the BLM explain how impacts can be mitigated if an unlimited amount of pipelines can be installed.	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines (see Section 1.9.1). However, the EIS does analyze broader indirect impacts associated with these production and support facilities. Any proposed pipeline would require a separate NEPA analysis to analyze impacts of the site-specific proposal and appropriate mitigation measures.
143.	Withheld	Withheld	Government of the Northwest Territories	92862	30	Direct/Indirect Impacts	The draft EIS does not describe how the 2,000 acre surface facility limit will be enforced, who will enforce it and under what legislation. The certainty that this mitigation of limited surface disturbance will be effective or even established is decreased without details on how it will be enforced. Recommendation The GNWT recommends the BLM provide detailed information on the enforcement of the 2,000 acre surface facility limit.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
144.	Barbara	Nabors	—	93673	2	Direct/Indirect Impacts	The EIS must be revised to honor the 2,000 acre limitation for production and support areas as required in PL 115-97. The EIS must include all infrastructure related to oil and gas production, such as gravel mines and ice roads, towards this cap. Also, the EIS must not allow construction beyond 2,000 acres if the areas are reclaimed, since there is no scientific basis that the reclaimed areas would function similarly to the non-disturbed areas. Also, the BLM must provide specific processes for tracking and enforcing this limit.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
145.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	21	Direct/Indirect Impacts	It is inappropriate for the BLM to allow for roll-over on the 2,000 acre limit. In an arbitrary interpretation, the BLM excludes gravel quarries from the 2,000 acre limit, arguing that quarries do not constitute a "support facility" for oil and gas infrastructure. The BLM insists that since gravel quarries only provide raw materials, they are no more a support facility than a mill that provides steel. ⁵³ The BLM undermines this interpretation by later including a seawater treatment facility within the 2,000 acre definition. Like gravel quarries and steel mills, a seawater treatment facility would provide raw materials to support oil and gas activities. Quarries would provide essential materials for oil and gas activities and would not exist in the Arctic Refuge without the existence of a leasing program. The exclusion of quarries from the 2,000 acre facility limit also mislead the public to the extent of damage under the leasing program. According to the DEIS gravel mining could encompass approximately 300 acres of tundra. The BLM must define quarries as a support facility and include them within the 2000 acre limit.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
146.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	21	Direct/Indirect Impacts	the BLM interprets the 2,000 acre limit as a rolling limit, allowing for 'reclaimed' sites to be removed from the ledger and new sites added. Unfortunately, fragile Arctic ecosystems can take generations to recover. For instance, scars from 1980s era seismic testing are still visible on the coastal plain. The DEIS fails to provide comprehensive analysis on how reclamation would occur, how long reclamation would take, and what metrics would be used to evaluate the successfulness of reclamation.	Operators would be required to submit a reclamation plan that satisfies the objective. At the earliest feasible time, the operator shall reclaim the area disturbed, to the extent necessary, by taking reasonable measures to prevent or control on-site and off-site damage of the federal lands. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
147.	Amy	Law	Government of Yukon	94076	31	Direct/Indirect Impacts	Further, the United States Public Law 115-97 has a limit of up to 2,000 surface acres to be covered by production and support facilities. The draft EIS provides no indication that the 2,000 surface acre limit will be enforced, despite stating this limit as a key mitigation.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
148.	Amy	Gulick	—	94077	6	Direct/Indirect Impacts	6) The Tax Cuts and Jobs Act of 2017 stipulated a 2,000-acre surface development limit on the Coastal Plain, and yet infrastructure including ice roads and pads, elevated pipelines, and gravel mines to not count as surface disturbance and, therefore, are not considered in the 2,000-acre limit of surface acres. This is disingenuous, and does not take into account the full impacts of all oil and gas activities and infrastructure.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
149.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	23	Direct/Indirect Impacts	BLM improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. BLM's interpretation of this provision includes pipeline supports, but not the actual pipelines themselves, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas and cause other changes to the lands and waters of the Coastal Plain. But BLM does not include other infrastructure and activities like gravel mining under this provision. Gravel mining has severe sound and other environmental impacts that could deter caribou and other species from important habitat areas.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
150.	—	—	Alaska Department of Natural Resources	94102	72	Direct/Indirect Impacts	48 Chapter 3, Page 3-232 Revise analysis- incongruous representation of the benefits vs. impacts Paragraph five on this page notes that "For the purposes of this analysis, the projections are based on the hypothetical development scenarios on potential economic impacts area carried through 2050 only." This 31-year time frame appears to conflict with the 50-year and 70-year time frames discussed elsewhere in the EIS documents. One time-frame should be used from for comparison across all the different disciplines, and we recommend the 50-or 70-year time frame	The timeframe utilized for impact analysis has been revised to 85 years, unless otherwise specified in individual resource sections.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
151.	Kennon	Meyer	—	94105	4	Direct/Indirect Impacts	the BLM adopts a “rolling” disturbance approach so that an unlimited number of acres could be disturbed over the life of the project, provided only 2000 acres are disturbed at any one time. ¹⁶ This approach violates the entire purpose of the limit, which is to protect the Coastal Plain’s resources from overdevelopment. The impact, for example, of roads on caribou may last well beyond the point of reclamation as animals learn to avoid areas that are historically occupied by vehicles. Similarly, polar bear dens that are abandoned because of human activity near well sites will not necessarily be reoccupied once sites are abandoned. In short, characterizing these surface disturbances as having “temporary” impact is misleading because the cumulative ongoing impacts could be long lasting. Under such circumstances, the “rolling” approach renders the limit meaningless.	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. Under all alternatives, ROP 35 requires restoration to the land’s previous hydrological, vegetation, and habitat condition.
152.	Kennon	Meyer	—	94105	6	Direct/Indirect Impacts	More importantly, this fundamental misinterpretation infects the entire DEIS analysis because, “The BLM employs this interpretation of Section 20001(c)(3) of PL 115-97 as an assumption in each of the action alternatives analyzed in the EIS.” ²³ By excluding such ice roads, pipelines, and gravel mines from the surface facility limit, the BLM is implicitly authorizing an unlimited amount of such facilities. This, in turn, means that the BLM has woefully understated the adverse impacts associated with the leasing program actually contemplated by Title II.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
153.	Andrew	Odgen	—	94112	2	Direct/Indirect Impacts	The Tax Cuts and Jobs Act of 2017 stipulated a 2000 acre surface development limit on the Coastal Plain. The DEIS interprets that ice roads and pads, elevated pipelines, and gravel mines do NOT count as surface disturbance and, therefore, are not considered in the 2,000 acre limit of surface acres outlined in the PL 115-97 (Vol. 2, Appendix B-9). BLM states that "inclusion of such facilities would make Congress's clear purpose - establishment of an oil and gas program on the Coastal Plain - impracticable" suggesting that they conducted their analysis in order to draw the desired conclusion (Vol. 2, Appendix B- 9).Further, they rationalize excluding gravel mines as being infrastructure that "they supply raw materials for construction of oil and gas facilities but are not themselves oil and gas facilities (Vol. 2, Appendix B-9)." BLM is also only counting 2000 acres "at any given time" (Vol 1, p. 3-221). This means that any land that is "reclaimed" can be deducted from the 2000 acre cap and credited toward more development. This rolling cap interpretation would allow for the entirety of the coastal plain to see the impacts of development over time	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
154.	William	Edwards	—	94530	2	Direct/Indirect Impacts	The DEIS completely fails to examine what this landscape looks like not only during active production, but after reclamation. There are still visible scars in the tundra from decades-old exploration activities. What will this coastal plain look like in one hundred years? I sure can't tell by reading this DEIS. This needs to go back to the drawing board to answer questions like this.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
155.	Withheld	Withheld	—	94632	3	Direct/Indirect Impacts	I find it absurd that the draft EIS does not consider the area covered ice roads and pads, elevated pipelines, and gravel mines as counting toward part of the maximum of 2000 acres of surface disturbance allowed under the Tax Act of 2017. If your neighbor or your local utility put a gravel mine and four parallel 16 inch diameter elevated pipelines across your property and claimed that it was allowable because their definition of "surface disturbance" didn't include these things, would you accept their "surface disturbance" definition? That would be preposterous, and so is the BLM's overly creative interpretation of this legislation. If our lawmakers set a maximum of 2000 acres of surface disturbance, they may have actually meant for the level of development to be minimal. The legislation may not have passed, had the surface facility limit been set higher in such a long-fought-for protected area. If they have no comprehension of just how much disturbance is required to enable resource extraction on a scale the BLM expects, then they need to be properly informed and allowed to reconsider the issue before allowing this process to move forward. I think the BLM has massively overstepped their bounds in ignoring the specific limits to surface disturbance set by law, by tailoring their own peculiar definition of "surface disturbance" to get the resulting true level of development (and greater real disturbance) they deem appropriate.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
156.	Withheld	Withheld	—	94632	4	Direct/Indirect Impacts	I also think the BLM's policy of allowing "reclaimed" land to be removed from this 2000 acre limit is also inexcusable, because it suggests that "reclaimed" land has not had it's surface disturbed, which is patently false. Reclamation never restores the land to an undisturbed wilderness state, at least not on a meaningful human timescale, particularly in such a cold and sensitive biome which revegetates so slowly. Perhaps after several centuries of regrowth the land could again be considered undisturbed, but certainly not within the timescales of the proposed leases. These overly creative interpretations essentially allow the leaseholders to develop far more of the surface than the limit set by law, and eventually to potentially develop and "reclaim" the entire coastal plain which is an obvious violation of the spirit and intent of the law.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
157.	Withheld	Withheld	—	95024	1	Direct/Indirect Impacts	The development portrayed in the DEIS with its barge landing, seawater treatment plant, and one CPF pad/airstrip and satellite wells is egregiously misleading (Vol. 2, B-15). How is the barge landing connected to the CPF? From Figures B-1 and B-2 in Vol. 2, the barge landing is completely unconnected to the CPF. And that little stub of a line that leaves the drawing in those same figures—where does the export pipeline to TAPS go? How long will that pipeline be and its required gravel roads? The DEIS notes that gravel roads are the biggest source of disturbance as a result of oil and gas development. Pipelines need gravel roads for year-round maintenance in case of an oil leak; ice roads cannot serve them. None of that additional development has been included in the acreage estimates or has its additional impact been assessed on wildlife and its habitat. It is highly unlikely that the 2,000-acre footprint can be observed. If indeed, the U.S. and the State of Alaska end up gutting the Coastal Plain to supply oil and gas to China and other countries, then the entire cost and potential damage to the area, from input to final output need to be included in any future Environmental Impact Statements.	At the leasing stage, it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
158.	Harry K.	Brower Jr.	North Slope Borough	95612	54	Direct/Indirect Impacts	We recommend that BLM provide additional explanation regarding the selection and application of the 50-year timeframe, and address some of the apparent inconsistencies associated with the underlying assumptions, to ensure that the potential environmental effects associated with leasing in the Coastal Plain are appropriately identified and evaluated.	The analysis in Chapter 3 has been revised to utilize an 85-year timeframe. Assumptions associated with the timing of the various phases of development are discussed in Appendix B.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159.	Greta	Burkart	—	96243	31	Direct/Indirect Impacts	The purpose of tiering is to “tier off their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review” (CEQ, 40 CFR 1500-1508 Subsection 1502.20). Tiering is not appropriate when tiered discussions are not relevant and a new analysis is warranted. In many cases tiering is inappropriate due to the differences between the Arctic refuge 1002 Area and the NPRA. In other cases tiering is not appropriate because the analyses or in the tiered-to documents are flawed and have not been peer-reviewed by subject matter experts. In many cases of tiering, it is not at all clear what part of which document is even be tiered to. The analysis of effects simply tiers to NPRA EIS and does not consider or even present the best available datasets that could be useful for analysis of the impacts in the Arctic Refuge 1002 Area. These datasets include Trawicki et al. 1991 and 1994, which provide the most comprehensive water quantity dataset and include water quantity for almost the entire surface area of lakes and covers the vast majority of major river miles. The only potential changes to groundwater considered in the analysis is the impact expected to occur to shallow suprapermafrost groundwater related to gravel mining. Gravel mining is not the only activity expected to impact groundwater and shallow suprapermafrost groundwater is not the only type of groundwater that may be impacted. Every aspect of infrastructure associated with oil and gas activities is expected to influence shallow suprapermafrost groundwater in the vicinity of infrastructure. Oil exploration, drilling, and injection of hazardous wastes into the ground has great potential for contamination of the	The terrain and topography of the Arctic Refuge Coastal Plain are steeper and more varied than where oil and gas activities have been conducted in the NPR-A. The types of oil and gas activities of the NPR-A are likely similar to the types of activities that would occur in the Arctic Refuge Coastal Plain if oil and gas were developed. The impacts of activities in the two regions would also be different due to differences in water availability, terrain, and physical features. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	deep groundwater flowpaths that support the springs that are so important to the unique aquatic and terrestrial communities in the Refuge's 1002 Area and the associated subsistence activities. These springs are not prevalent in the NPRA and there are no supporting data to indicate groundwater in the NPRA has not been contaminated; thus, tiering off to an NPRA EIS for this analysis is not appropriate.	(see above)
160.	Greta	Burkart	—	96243	87	Direct/Indirect Impacts	Since the development scenarios for the alternatives did not address a range of development/infrastructure needs at the level necessary to assess impacts on fish and aquatic species (e.g. water withdrawal needs, ice road length, gravel mine locations and type), it is not possible to conduct an analysis that considers these factors when assessing impacts and comparing alternatives. More information is necessary to complete an adequate analysis. This information should include water needs, ice road lengths, etc. When there are a range of possibilities for a given scenario, the range should be given. This type of analysis needs to happen so that document authors can adequately assess impacts for water resources, vegetation, etc. Until this information is available, an adequate analysis cannot be done.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
161.	Greta	Burkart	—	96243	97	Direct/Indirect Impacts	t: It is misleading to call the 2,000-acre cap a surface disturbance cap if the BLM interpretation is that the cap does not include all types of surface disturbance related oil development. Use more appropriate terminology that is not misleading.	Text of Appendix B has been revised to be consistent with Section 1.9.1 in reference to the 2,000-acre limit.
162.	Greta	Burkart	—	96243	98	Direct/Indirect Impacts	Be explicit about what offshore actions are planned so that these can be considered in the range of effects. Otherwise, these analyses are grossly incomplete.	The analysis is based off the hypothetical unconstrained scenarios contained in Appendix B.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
163.	Brook	Brisson	Trustees for Alaska	96981	11	Direct/Indirect Impacts	First, BLM is interpreting the limitation to be a rolling limit, as opposed to a cumulative cap on impacted acreage. ⁵⁵ In the proceedings leading up to bill passage, this provision was described as providing a cap on all surface development on the Coastal Plain. ⁵⁶ At no point in the legislative history is there any indication Congress intended for this number to be a rolling total or that Congress wanted BLM to rely on wholly unproven reclamation techniques to further expand the footprint of development beyond 2,000 acres. Interpreting the limitation to allow for additional lands to be developed if other lands are reclaimed means that much more than 2,000 acres of the Coastal Plain would be impacted by oil and gas activities. This is contrary to the Tax Act and cannot be permitted. Two-thousand acres is the maximum cumulative acreage that can be impacted by surface development under the Tax Act.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
164.	Brook	Brisson	Trustees for Alaska	96981	12	Direct/Indirect Impacts	In the draft EIS, BLM concludes that only 8.4 to 10 acres would be impacted by the vertical supports for elevated pipelines, even though 210 to 250 miles of pipelines would be constructed on the Coastal Plain. ⁵⁹ BLM's basis for this interpretation is that the language of the Tax Act identifies "piers for support of pipelines." ⁶⁰ BLM's interpretation fails to account for the fact that the list included in the Tax Act is an inclusive list, not an exclusive list. Pipelines are unquestionably production and support facilities developed on the surface of the Coastal Plain. As such, all areas impacted by elevated pipelines should count toward this limitation, including the full length of the pipelines themselves as well as the vertical supports. Interpreting the limitation to apply to pipelines in this way is consistent with the overarching goal that this provision be a protective measure for the Coastal Plain. By interpreting the limitation to ignore the miles of actual pipelines, BLM is able to ignore considerable acreage directly impacted by pipelines. BLM's attempt to exclude elevated pipelines themselves from the 2,000-acre limitation cannot carry forward in the final EIS. ⁶¹ [It is also unclear how BLM is accounting for the assumed connections to the Trans-Alaska Pipeline System in its overall surface disturbance calculations. See DEIS vol. 2 at B-8, B17.]	Section 20001(c)(3) only applies the 2,000-acre limit to land that is directly occupied by production and support facilities. This is made clear by the Tax Act's reference to areas covered by piers for support of pipelines; however, the EIS does analyze broader indirect impacts associated with these production and support facilities. The 2,000-acre limit includes all surface development and fill within the Coastal Plain (see Section 1.9.1).

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
165.	Brook	Brisson	Trustees for Alaska	96981	13	Direct/Indirect Impacts	BLM asserts that it is not including gravel mines under the category of things subject to the 2,000-acre limitation because gravel mines supply raw materials to build oil and gas facilities, but are not, according to BLM, facilities themselves. ⁶⁴ This is inconsistent with BLM's own interpretation of the term "facility." According to BLM, a "facility" is something that is "built, installed, or established to serve a particular purpose." ⁶⁵ It is also inconsistent with the National Research Council's accounting of gravel infrastructure on the North Slope, which included gravel mines in the total impacted area. ⁶⁶ Gravel mines are built and established to serve the particular purpose of supplying gravel for oil and gas roads and pads. Their only purpose under the oil and gas program is to support oil and gas development. ⁶⁷ If not for the oil and gas program, these gravel mines would not be built. BLM recognizes as much in the draft EIS. ⁶⁸ BLM also acknowledges that gravel mines are part of the program by subjecting them to project requirements under ROP 24. If they are part of the program, they must be subject to the 2,000-acre limitation...BLM's attempt to exclude them from the category of things that is subject to the 2,000-acre limitation cannot carry forward in the final EIS.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
166.	Brook	Brisson	Trustees for Alaska	96981	14	Direct/Indirect Impacts	BLM also does not specify in its 2,000-acre limitation how it will address several other types of infrastructure including buildings without gravel pads that are elevated over the tundra, gravel roads that expand in width following use (a common occurrence on the North Slope), power lines, and snow fences.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
167.	Brook	Brisson	Trustees for Alaska	96981	15	Direct/Indirect Impacts	In addition to improperly interpreting the limitation, BLM fails to address important components of the 2,000-acre limitation. First, how the surface disturbance is permitted to occur will have vastly different impacts on habitat and, as a result, subsistence uses. As the U.S. Court of Appeals for the Tenth Circuit recognized, having a simple limitation on the amount of surface disturbance but no direction on how that disturbance will occur can result in a significant variation in the effects of that disturbance on plants and wildlife. In <i>New Mexico ex rel. Richardson v. BLM</i> , the BLM changed from an alternative that limited surface disturbance associated with oil and gas development to a specific location (along existing roads) to a cap of one percent of lease acreage.... BLM's draft EIS fails to consider what 2,000 acres of development could look like geographically and spatially, and the impacts that could occur depending on the location of activities and development.	At the leasing stage, it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
168.	Brook	Brisson	Trustees for Alaska	96981	16	Direct/Indirect Impacts	The agency also failed to explain what mechanism it is adopting to ensure that the agency has the ability to regulate surface development to actually keep any development below this acreage cap, as well as the enforcement authority available to the agency to ensure compliance if development begins. Importantly, BLM has not elaborated how it intends to track surface disturbance to ensure that limits are not being neared, then reached and exceeded by multiple projects at the same time. BLM needs to demonstrate reliable technology, reporting, verification and monitoring techniques that it intends to use.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
169.	Brook	Brisson	Trustees for Alaska	96981	18	Direct/Indirect Impacts	BLM has not elaborated upon how it intends to enforce the surface facility limitation once it grants leases to operators. It is not clear if the agency intends to place any limits on individual leases or to simply track the acreage and then send notices to companies to halt activities if acreage limits are reached. Nor is it clear how individual companies will be required to track surface-disturbing activities and report them.	Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
170.	Brook	Brisson	Trustees for Alaska	96981	22	Direct/Indirect Impacts	Finally, BLM failed to explain how it interprets this limitation to apply to the private lands on the Coastal Plain (i.e., the KIC/ASRC lands and Native Allotments). BLM explains how it will apply the limitation on Federal land. But the limitation is also a legal requirement to conserve the Arctic Refuge Coastal Plain. As such, BLM must explain how it could apply to all private lands in the Refuge under section 22(g) of the Alaska Native Claims Settlement Act as well as how it could apply to ASRC/KIC lands under the terms of that Land Exchange Agreement.	See Section 1.4 for clarity of private lands. The BLM only has the ability to implement the oil and gas leasing program on federal lands within the Coastal Plain of the Arctic National Wildlife Refuge.
171.	Brook	Brisson	Trustees for Alaska	96981	61	Direct/Indirect Impacts	The draft EIS does not include impact criteria and overall rankings that show the level of impact by alternative for impacts to all resources. BLM provides no explanation for the arbitrary absence of impact criteria or analysis of the level of impacts by alternative. Through its NPR-A planning and leasing efforts, BLM has developed specific impact criteria for nearly every resource present on the Coastal Plain. These criteria were well-vetted and subject to public comment in the GMT1 Final SEIS and GMT2 Draft SEIS. ¹⁷⁴ There is seemingly no reason that BLM should refuse to use impact criteria in the Draft EIS for the Coastal Plain.	The organization and approach to analysis in Chapter 3 have been standardized across all resources. See Appendix F for definitions of context, intensity, and duration, and descriptions of impact criteria by resource.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
172.	Brook	Brisson	Trustees for Alaska	96981	73	Direct/Indirect Impacts	The draft EIS fails to provide sufficient detail about the stipulations and ROPs being contemplated, or to analyze their effectiveness. This is because the approach to analyzing the mitigation measures is fundamentally flawed: it considers the amount and purported benefit of the measures, instead of analyzing the adverse effects that are still likely to occur. This means that the EIS fails to disclose the effects that will occur despite mitigation. ...For example, Appendix E contains this statement: "The mitigation measures proposed under Alternative B (Lease Stipulations 3, 4, 7, and 9, and ROPs 23 and 42) would be adequate to maintain caribou passage to coastal areas."218 But there is no meaningful analysis of how these stipulations and ROPs would be effective. ... In some instances, the impacts analysis mentions a potential mitigation measure without even referring back to a specific stipulation or ROP, leaving the reader guessing if and how such a measure might be implemented.220 The draft EIS utterly fails to analyze the effectiveness of its proposed mitigation measures.	The analyses in Chapter 3 and discussions in Appendix E have been revised based on public comments received.
173.	Brook	Brisson	Trustees for Alaska	96981	90	Direct/Indirect Impacts	BLM repeatedly refers to other documents as a way to truncate and obscure analysis in the draft EIS, contrary to NEPA. For example, BLM refers to the NPRA's Greater Mooses Tooth 2 development's analysis as "fully describing" how climate change is impacting soils and permafrost.762 The text of the draft EIS, however, contains only wholly uninformative, bland statements like "climate change described under Affected Environment above [i.e. the reference to the NPRA document], could influence the rate or degree of the potential cumulative impacts."763 It contains none of the information in the NPRA document about changes to surface topography, increased water accumulation, changed	Section numbers have been provided when discussions in other major studies and reports are incorporated by reference.

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
173. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	drainage patterns (including sudden drainage events), and increased potential for soil erosion and sedimentation. In the Refuge's Coastal Plain, many of these phenomena have already been greatly accelerated by climate change in the past 30 years. ⁷⁶⁴ BLM also repeatedly cites, without informatively explaining or summarizing, the environmental analysis for the Nanushuk project, which is on state lands immediately adjacent to the Reserve; BLM relies on the Nanushuk decision to support its statements about changes to snow conditions that can occur from infrastructure, reclamation impacts, the potential for accelerated permafrost thaw, and for the proposition that placement of fill will cover soils and kill existing vegetation, which in turn alters the thermal active layer. ⁷⁶⁵ BLM's incorporation of these unrelated decision documents by reference is deficient on multiple grounds. First, BLM failed to provide adequate citations or explanations about the content and nature of those documents, contrary to binding NEPA regulations and guidance that require summaries of referenced material. ⁷⁶⁶ It is impossible for the public to determine precisely which sections BLM is referring to and to understand how the analyses in those documents may or may not apply to the Coastal Plain.	(see above)
174.	Brook	Brisson	Trustees for Alaska	96981	121	Direct/Indirect Impacts	BLM's analysis of how the impacts will differ between alternatives focuses heavily on the no surface occupancy provisions to differentiate between the impacts under each alternative. ⁸³⁰ However, there are serious questions about whether the NSO and other timing provisions are likely to be effective. These provisions will only be effective to the extent that BLM actually adopts and holds to those safeguards. As written, the draft EIS allows for	Additional text has been added to Table 2-2 clarifying the process. Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not

S. Public Comments and BLM Responses (Direct/Indirect Impacts)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
174. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	waivers, exceptions, and modifications to these and other requirements, opening the door for operators to avoid ever complying with those requirements.831 BLM should remove these waivers exceptions, and modifications. However, because it has included them, BLM needs acknowledge and fully assess the ways in which waivers, exceptions, and modifications to these so-called protections could lead to far greater impacts and a much larger footprint than analyzed in the draft EIS.	cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
175.	Brook	Brisson	Trustees for Alaska	96981	125	Direct/Indirect Impacts	BLM also needs to fully evaluate any gravel mines used to support oil and gas infrastructure on the Coastal Plain as a connected action in the EIS. "Connected actions" are defined as actions that: automatically trigger other actions which may require environmental impact statements; cannot or will not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification. ⁸³⁸ The entire purpose of these gravel mines would be to supply gravel for any oil and gas infrastructure; they would not be developed but for the need to use them as part of the oil and gas program. Thus, BLM must fully analyze the direct, indirect and cumulative impacts of gravel mining for each action alternative. BLM must conduct this analysis, regardless of whether the gravel mines are ultimately projected to be within or outside the boundaries of the Refuge.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
176.	Withheld	Withheld	—	97253	4	Direct/Indirect Impacts	all of the action alternatives should be revised to allow for no more than 2,000 acres of surface disturbance, including all roads, landing strips, gravel pits, etc... All of this infrastructure is surface disturbing and has potentially detrimental effects on wildlife, access for subsistence, water quality, recreational use and access, and other characteristics of the Refuge. It should be considered in the total acres of surface disturbance.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
177.	Withheld	Withheld	—	97404	1	Direct/Indirect Impacts	1. PL 115-97 authorizes up to 2000 surface acres to be covered by production and support facilities. Your addition of language to this bill, namely 2000 acres “at any one time”, changes the intent of the law and is outside of the purview of your agency. 2. Several specialist's reports neglect to consider this “at any one time” language and have assumed that, in total, 2000 acres would ever be disturbed. These documents need to reconsider the full events of your proposed action. 3. Removing lands affected by gravel mines from the 2000-ac limit is arbitrary and without basis. It is also inconsistent with your 2012 BLM NPR-A IAP/EIS where gravel mines were defined as “permanent oil and gas facilities”.	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. Resource discussions for all action alternatives analyze up to 2,000 acres of development from oil and gas facilities. Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
178.	Withheld	Withheld	—	97577	1	Direct/Indirect Impacts	While in the earlier sections of Chapter 3, adverse environmental/subsistence/economic impacts for each of the options as they pertain the identified categories are covered in some detail, there is, understandably, a lack of specific strategies or tactics stated that would accomplish the goals of mitigating these impacts. However, in light of the broad disagreement concerning potential harm arising from the action options, far more attention should be given to adverse impacts that have been identified as unavoidable. Section 3.5 consists of 2 paragraphs and 8 bullet points, and fails to adequately give weight to the concerns that arise from the information contained within it. Although this section makes references to concerns raised elsewhere in Chapter 3, it should provide more specific and informative coverage to the points it discusses;	The analyses in Chapter 3 and discussions in Appendix E have been revised based on public comments received.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
179.	Susan	Smith	—	97752	3	Direct/Indirect Impacts	I believe the Tax Act of 2017, which included a provision for oil gas leasing in ANWR, mandates a lease offering of 400000 acres, and stipulates 2000 acres may be devoted to infrastructure. 2000 acres does not seem like much compared to the entire Coastal Plain, but it appears that the term infrastructure does not include roads, gravel pits, etc, which will certainly have as much impact as a drill pad itself. Infrastructure needs to be redefined to include all man-made transformation of the area. Also, it looks like the 2000 acres means 2000 acres at one time, and when one area is finished, the leaseholder can move on to another 2000 acre parcel. This is ludicrous, as it opens the entire area to destruction. This does not sound like what Congress intended. This 2000 acre provision needs to be more carefully considered and defined to truly minimize the impact of development on the wilderness uses originally intended in establishing ANWR	Alternative D2 has been revised to offer 800,000 acres of land for leasing. Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
180.	Jenna	Jonas	—	97882	6	Direct/Indirect Impacts	This is not how it should work. The DEIS does not provide a balanced range of alternatives, it provides a only very development-focused options and no conservation-focused ones. BLM is also only counting 2000 acres “at any given time” (Voll, p. 3-221). This means that any land that is “reclaimed” can be deducted from the 2000 acre cap and credited toward more development. This rolling cap interpretation would allow for the entirety of the coastal plain to see the impacts of development over time. is also only counting 2000 acres “at any given time” (Vol1, p. 3-221). This means that any land that is “reclaimed” can be deducted from the 2000 acre cap and credited toward more development. This rolling cap interpretation would allow for the entirety of the coastal plain to see the impacts of development over time. In addition, the alternatives presented far exceed the amount of acreage mandated by the Tax act.	As stated in Section 1.9.1, the BLM interprets the language “during the term of the leases” in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.
181.	Helen	Nienhueser	—	97946	2	Direct/Indirect Impacts	Another area dealt with inadequately is the 2000 acre surface development limitation. Elevated pipelines and gravel mines certainly are surface development. look at what is there now, imagine an elevated pipeline or a gravel pit and tell me with a straight face that this is not surface development! And do you seriously think reclaimed land is. the same as what is there now? (Time scale matters on this issue. How long will it be before the footprint of man is erased? Certainly more than one lifetime ...)	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
182.	Christy	Stebbins	—	97980	1	Direct/Indirect Impacts	The BLM needs to include all of the oil and gas development-related infrastructure in calculating the 2,000-acre surface disturbance.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
183.	Katherine	Trisolini	—	98002	9	Direct/Indirect Impacts	Finally, the exclusion of ice roads and structures on the basis that these are temporary and without permanent environmental impact is not supported by any evidence. In fact, explanation of impacts from ice pad and ice road construction elsewhere in the document seems to contradict this claim.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
184.	Jamie	Williams	The Wilderness Society	98058	3	Direct/Indirect Impacts	The omission of maps, diagrams, or visuals of realistic development scenarios obscures the import of BLM's faulty interpretation of the Tax Act's 2,000-acre surface facility limitation, including the agency's decision not to include significant infrastructure such as gravel mines in the acreage limitation. ⁶ The DEIS also fails to provide clear guidelines for implementing and enforcing the limitation or to consider different geographic and spatial disturbance configurations for the infrastructure. Collectively, these failures have misled some to believe that that only a small portion of the Coastal Plain would contain oilfield infrastructure.	At the leasing stage, it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. Section 1.9.1 describes those facilities that will be counted against the 2,000 acres. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
185.	Susan	Culliney	—	98092	3	Direct/Indirect Impacts	the EIS does not limit development to 2,000 acres on the coastal plain as required by the 2017 Tax Act. The EIS would count gravel roads, pipeline supports, and drill pads towards the 2,000 acres, but would not count gravel mines or ice roads, two types of infrastructure that are impactful. The EIS would count the development acreage "at any given time," meaning that as impacted acres are supposedly reclaimed, those acres would no longer count toward the 2,000 limit. More acres could be developed, and the cumulative impact of acreage would be far greater than 2,000 acres. Nor does the EIS clearly explain how the agency will track the acreage through time and how it will hold companies accountable.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines. The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.
186.	Susan	Culliney	—	98092	5	Direct/Indirect Impacts	The EIS does not limit development to 2,000 acres, does not explain how a limit would work, and also simply reveals that the very notion of limiting the impacts of development on the coastal plain 2,000 acres is false.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
187.	John	Schoen	—	98097	4	Direct/Indirect Impacts	The DEIS does not adequately address how the area to be covered by production and support facilities will be limited to 2,000 acres, as required by law. This is especially important in view of the National Research Council's 2003 finding that the impacts on Arctic development extend far beyond the physical footprints of the necessary facilities and infrastructure.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
188.	John	Schoen	—	98097	8	Direct/Indirect Impacts	the DEIS is seriously flawed without describing and committing to a comprehensive monitoring plan for the coastal plain	Monitoring plans will be tailored to the specific location of development and resources or activity being monitored; it is not practicable to develop a template that would cover all resources, activities, and requirements for this EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
189.	Pamela	Miller	—	98116	2	Direct/Indirect Impacts	And furthermore, the 2,000 acres does not apply to private lands or state lands, but those impacts? Have not been included even in the cumulative impact analysis. So there has been no addressing potential impacts from the Kaktovik Iñupiat Corporation lands that are within the program area or outside the program area but within the external boundaries of the refuge.	See Section 1.4 for clarity of private lands. The BLM only has the ability to implement the oil and gas leasing program on federal lands within the Coastal Plain of the Refuge.
190.	Pamela	Miller	—	98116	2	Direct/Indirect Impacts	Furthermore, in the 2,000 acres it does not include gravel mines. It does not include the water, how water will be obtained	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
191.	Pamela	Miller	—	98116	2	Direct/Indirect Impacts	One of the real challenges with this Environmental Impact Statement is the hypothetical development scenarios, as well as what's in or out of the 2,000 acres. So there is not described how the government will keep track of the accounting from now until 130 years from now of the infrastructure, the permanent infrastructure, what's included within the 2,000 acres.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2. . The BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	Pamela	Miller	—	98116	8	Direct/Indirect Impacts	these river systems of the coastal plain are extraordinarily different than coming straight out of the glaciers of the Brooks Range. Some of the water comes from springs that are fed by water on the south side of the Brooks Range, which is very interesting to think about. Where is that water coming from? If you disturb those spring systems that are feeding the fresh waters of the Canning, the Hulahula, the Aichilik and potentially other rivers, as well as -- anyway, it will affect the long-term natural diversity of fish and wildlife and their habitats, the populations in the river systems. That's not been adequately addressed in the EIS and is not captured by this 2,000-acre assumption of what facilities will be needed and activities that cause disturbance in the refuge.	ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
193.	Valanne	Glooschenko	—	98147	4	Direct/Indirect Impacts	Thirdly, the problem is the EIS contains proposed infrastructure requirements that also allows the company to obtain waivers, exceptions, and nullification of any of the requirements. It's impossible to comment on the impacts of development if the public does not know what requirements actually will be imposed. This is an extremely serious deficit.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice,

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193. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
194.	Valanne	Glooschenko	—	98147	5	Direct/Indirect Impacts	The fourth deficit of the Draft EIS is the tax law Congress passed authorizing development in the refuge limits, quotes, "surface disturbance," quotes, to 2,000 acres. BLM has chosen to interpret the 2,000-acre limitation to exclude ice roads and excludes hundreds of miles of elevated pipelines. It excludes gravel finds. All the other types of infrastructure. However, BLM needs to include all oil and gas development related infrastructure in the 2,000-acre calculation. Otherwise, the BLM is proposing a false set of data upon which it wants the public to comment. It's proposing a false set of information, minus all the critical infrastructure elements that are simply not even on the table. Shame on you, BLM.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

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195.	Bella	Moucher	—	98186	1	Direct/Indirect Impacts	The BLM almost completely ignores the transboundary impacts that oil and gas drilling in the Arctic Refuge would have on Canada. The BLM must comprehensively address the direct, indirect, cumulative and transboundary impacts of drilling in the Arctic Refuge.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
196.	Brook	Brisson	Trustees for Alaska	98269	41	Direct/Indirect Impacts	The DEIS gives shockingly little attention to transboundary impacts. While the DEIS mentions the International Porcupine Caribou Agreement and devotes some attention to the indirect effects of oil and gas leasing on caribou and other migratory and transboundary species in Alaska, it almost entirely ignores such impacts in Canada. The potential transboundary effects of oil and gas leasing associated with the Porcupine Caribou Herd (PCH) is of paramount concern, given that 85 percent of the PCH harvest occurs in Canada. ⁴³³	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.
197.	Brook	Brisson	Trustees for Alaska	98269	42	Direct/Indirect Impacts	More egregious is the complete lack of information about transboundary impacts on Canadian communities in the Sociocultural Systems and Environmental Justice sections of the DEIS. ⁴³⁵ The DEIS largely focuses on impacts to four Alaskan communities - Kaktovik, Nuiqsut, Arctic Village, and Venetie - and never mentions any affected Canadian communities such as Old Crow, Aklavik, or Fort McPherson. ... ⁴³⁶ Caribou do not perceive borders and BLM must acknowledge the calving grounds of the PCH are sacred to all Gwich'in people, whether Canadian or Alaskan.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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198.	Brook	Brisson	Trustees for Alaska	98269	45	Direct/Indirect Impacts	BLM has also failed to consider the transboundary impacts of Coastal Plain oil and gas development on migratory birds that migrate between the coastal plain and other countries. For example, shorebirds such as Dunlin that use the East Asian-Australasian Flyway are experiencing increased coastal development along migratory and wintering areas. ⁴³⁷ Development in the project area could exacerbate the pressures faced by Dunlin and other transboundary migratory birds.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
199.	Brook	Brisson	Trustees for Alaska	98269	83	Direct/Indirect Impacts	As a threshold matter, BLM's view that it can allow more than 2,000 acres of direct development impacts is flatly inconsistent with the language of the Tax Act. That law permits the Secretary to authorize that "up to 2,000 surface acres of Federal land on the Coastal Plain . . . be covered by production and support facilities . . . during the term of the leases." ⁴⁸⁹ The metric the Tax Act uses does not mean "at one time." Rather, it provides a single limit for all acreage covered by facilities throughout the life of the leasing program.	As stated in Section 1.9.1, the BLM interprets the language "during the term of the leases" in Section 20001(c)(3) of PL 115-97 as indicating Congress intended a temporal limit. Under this interpretation, the reclaimed acreage of federal land formerly containing production and support facilities would no longer count toward the 2,000-acre limit, which has been revised to include gravel mines.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
200.	Brook	Brisson	Trustees for Alaska	98269	86	Direct/Indirect Impacts	BLM's analysis fails to adequately account for the long-term changes that are likely to occur from infrastructure and the challenges related to reclamation that relate to that. It is unrealistic to expect that reclamation will return land to its previous condition and ecosystem function. The ground under a gravel pad or road is compressed over time, lowering the surface elevation. When gravel is removed to meet land lease agreements and USACE regulations, sometimes gravel is left behind to avoid creating a square lake. The only way to maintain an elevation similar to that of the surrounding tundra grade is to leave a certain amount of gravel at the site. Because of the drastic change in soil conditions, and often in hydrology, natural colonization by species similar to those in the surrounding relatively undisturbed tundra is less likely. If grass seed is sown, even species that are expected to decline over time, the resulting plant community does not aesthetically or functionally resemble the surrounding plant community. If a site subsides after gravel is removed and the site becomes covered in more water than was present prior to development, there is little that can be done to reverse this condition. The Coastal Plain tends to have high volumes of ground ice, making it more likely that a site will subside once gravel is removed. BLM needs to account for these long-term impacts and changes in its impact analysis and consideration of reclamation.	Until such time as the areas are reclaimed as required by ROP 35, they would still be included in the 2,000-acre limit. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

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201.	Brook	Brisson	Trustees for Alaska	98269	89	Direct/Indirect Impacts	Restoration implies that a site will return to its pre-program conditions. Based on over 30 years of tundra rehabilitation activities, it is unrealistic to expect a site on the North Slope to return to pre-program conditions in a human-significant time frame. In addition, road dust, especially within 100 feet of a road, can settle onto surrounding permafrost, altering albedo, evapotranspiration, and vegetation communities. In areas heavily covered in dust, permafrost ice wedges can melt, resulting in degraded polygons (those in which the ice wedges have melted leaving the centers of the polygons higher than the surrounding grade). This is an irreversible long-term impact. BLM should acknowledge all of these long term impacts as part of its analysis and consideration of impacts.	Until such time as the areas are reclaimed as required by ROP 35, they would still be included in the 2,000-acre limit. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
202.	Brook	Brisson	Trustees for Alaska	98270	46	Direct/Indirect Impacts	BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not they are enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its analysis, as that could negate any of the purported protections and benefits of such provisions.	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill,

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
202. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
203.	Brook	Brisson	Trustees for Alaska	98270	107	Direct/Indirect Impacts	Nor does the DEIS include any information about how it will monitor and respond to changes in recreation and visitor experiences to ensure that Refuge purposes are met, as we requested in our scoping comments.	Monitoring plans will be tailored to the specific location of development and the resources or activity being monitored.
204.	Brook	Brisson	Trustees for Alaska	98270	147	Direct/Indirect Impacts	The geographic scope of the various "affected environment" discussions in the DEIS is too narrow.1885 These discussions focus heavily on the "program area," which is much smaller than the area that will experience effects from the proposed action.1886 While the program area encompasses the "[f]ederal lands and waters ... of the Coastal Plain within the ... Arctic Refuge"1887 and includes approximately 125 miles of coastline from the Staines River to the Beaufort Lagoon,1888 shipping activities connected with the proposed action will take place, and their impacts will be felt, along the entire 1,600-nautical mile (nm) marine barge route from Dutch Harbor to Kaktovik, Alaska.1889	Marine vessel traffic is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical unconstrained scenarios in Appendix B. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.

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205.	Brook	Brisson	Trustees for Alaska	98270	148	Direct/Indirect Impacts	Due to the narrow scope of the affected environment discussions, there is very little baseline information in the DEIS regarding the important marine areas along the marine shipping corridor to the west and south of the program area that could be adversely affected by shipping activities associated with the proposed action. Some important marine areas left out of the DEIS are in the Beaufort Sea and Chukchi Sea regions, including the Chukchi Corridor, Hanna Shoal, Herald Shoal, Barrow Canyon East, Smith Bay, Harrison Bay-Colville Delta, Beaufort Shelf Break, and Oliktok Point to Demarcation Bay, which are described in the attached reports.¹⁸⁹⁰ Other important marine areas not addressed in the DEIS are in the Bering Sea region, such as the Bering Strait and the waters surrounding King Island, St. Lawrence Island, and Nunivak Island, as described in the attached report prepared by the U.S. Coast Guard.¹⁸⁹¹ Including baseline descriptions of these important marine areas in a revised DEIS will facilitate appropriate discussions regarding the direct, indirect, and cumulative impacts arising from the shipping activities associated with proposed Coastal Plain oil and gas operations. ¹⁸⁹⁰ See, e.g., Pew Charitable Trusts, et al, A Synthesis of Important Areas in the U.S. Chukchi and Beaufort Seas: Best Available Data to Inform Management Decisions (April 2016), available at https://www.pewtrusts.org//media/assets/2016/05/synthesis_of_important_areas_us_chukchi_beaufort_seas.pdf; Natural Resources Defense Council, et al, Environmental Risks with Proposed Offshore Oil and Gas Development off Alaska's North Slope (Aug. 2012), available at https://www.nrdc.org/sites/default/files/drilling-off-north-slope-IP.pdf. ¹⁸⁹¹ See,	Marine vessel traffic is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical unconstrained scenarios in Appendix B. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.

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205. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	e.g., U.S. Coast Guard, Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea, Docket Nos. USCG-2014-0941 and USCG-2010-0833 (Dec. 23, 2016), available at https://www.regulations.gov/contentStreamer?documentId=USCG-2014-09410040&attachmentNumber=1&contentType=pdf .	(see above)
206.	Brook	Brisson	Trustees for Alaska	98270	151	Direct/Indirect Impacts	Shipping-related oil and hazardous substance spills and resulting impacts are not discussed in any substantive way in the DEIS. While the potential for oil and hazardous substance spills is evaluated in the solid/hazardous waste section of the DEIS, this section focuses on terrestrial and freshwater impacts resulting from spills associated with onshore operations.1899 There are also a few sentences referring to the potential for marine impacts from oil spills in the water resources section, but this language refers to spills from onshore barge docking sites, not from shipping.1900 The apparent rationale for the general exclusion of shipping-related spills from the DEIS analysis is buried in the marine mammal section. The narrative strongly downplays the potential likelihood, extent, and harm of any oil or hazardous substance spill by suggesting that (1) there is a "low risk" of spilled fuel if a vessel carrying fuel were to run aground during barging, (2) a large oil spill in the Arctic marine environment is unlikely because "[t]o date," such as a spill has "not occurred," (3) spill risks will be reduced through "safeguards" specified in the required oil spill prevention and contingency plans, (4) the quantities of oil or hazardous substances likely to be released would be "relatively small," and (5) potential spills during refueling at sea would be only "small, accidental" spills.1901 This rationale is deeply flawed. While bulk fuel has historically been delivered to the North Slope by	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed, and in some cases more stringent, than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

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206. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	tanker truck along the haul road, bulk fuel deliveries by barge have commenced and are likely to become the preferred option in the future. The first large-scale fuel delivery by barge took place in September 2018, and it carried 2 million gallons of fuel from Valdez to Deadhorse.1902 A collision, grounding, or other accident resulting in the discharge of even half the cargo of a fuel barge of this size (i.e., 1 million gallons) would be 10 times greater than BLM's own threshold for a "very large" spill,1903 and it would constitute a major spill by any other estimation as well. Moreover, as the ice-free, open water season lengthens due to warming temperatures in the Arctic, transporting fuel by barge is likely to be viewed as a more convenient and/or cost-effective method of transporting fuel compared to the much smaller and more frequent 10,000-gallon increments that can be transported via tanker truck.1904 Barge deliveries may even be the only feasible way of transporting fuel in support of Coastal Plain oil and gas operations because of the lack of a road between Deadhorse and Kaktovik. 1905	(see above)
207.	Brook	Brisson	Trustees for Alaska	98270	154	Direct/Indirect Impacts	Accordingly, the spill analysis in section 3.2.11 of the DEIS must be expanded to encompass large-scale spills into the marine environment from bulk fuel barges, both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.	Marine vessel traffic is generally beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical unconstrained scenarios in Appendix B. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
208.	Brook	Brisson	Trustees for Alaska	98270	155	Direct/Indirect Impacts	Additionally, as the DEIS acknowledges, toxic chemicals and other hazardous materials are used in oil and gas operations and have been known to kill polar bears through accidental ingestion.1909 In fact, on the North Slope of Alaska, substantial quantities of acidic, explosive, poisonous, flammable, and corrosive materials are transported into the area each year, including several substances designated "extremely hazardous," such as sulfuric acid, hydrochloric acid, hydrogen peroxide, and chlorine.1910 The same types of chemicals can be expected to be used at new oil and gas facilities on the Coastal Plain. While trucks have been used to transport chemicals to the North Slope historically,1911 marine transportation is likely to be used for Coastal Plain operations given the lack of a road between Kaktovik and Deadhorse.1912 The spill analysis in section 3.2.11 of the DEIS must therefore be expanded to encompass toxic chemical spills into the marine environment from shipping activities both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.	Marine vessel traffic is generally beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical unconstrained scenarios in Appendix B. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.
209.	Brook	Brisson	Trustees for Alaska	98270	156	Direct/Indirect Impacts	Finally, the DEIS must consider the marine impacts of potential oil spills on keystone Arctic species, such as the Arctic cod. Arctic cod (<i>Boreogadus saida</i>) are an energy-rich Arctic keystone forage fish that serve as primary prey species for marine mammals, seabirds, and fish. A recent study by scientists at Oregon State University and NOAA found that exposure of Arctic cod eggs to low dosages of Alaskan North Slope crude oil resulted in sublethal cardiac abnormalities and deficits in energetics that lasted into the juvenile stage.1913	Arctic cod EFH is discussed in Appendix P. Future site-specific NEPA analyses for proposed projects would be required. A more quantified analysis for specific species is more appropriate during a site-specific analysis. Additionally, at the time of a site-specific proposal, the operator will be required to submit a spill response plan.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
210.	Brook	Brisson	Trustees for Alaska	98270	158	Direct/Indirect Impacts	Reduced survival and fat content are irreversible impacts that make Arctic cod, and in turn, the maritime Arctic ecosystem that depends on them, highly vulnerable to an oil spill. Furthermore, Arctic cod eggs are buoyant, 1914 as is oil, making them additionally sensitive to potential oil spills. If the Coastal Plain were to be developed, and Arctic cod embryos came into contact with oil from a future spill, the eggs would be in contact with the oil for an extended period of time. Thus the eggs are highly vulnerable to exposure. The spill analysis in section 3.2.11 of the DEIS must also therefore be expanded to encompass the impacts of oil spills on the survival of keystone species at critical life stages and the marine ecosystems whose life they support.	Arctic cod EFH is discussed in Appendix P. Future site-specific NEPA analyses for proposed projects would be required. A more quantified analysis for specific species is more appropriate during a site-specific analysis. Additionally, at the time of a site-specific proposal, the operator will be required to submit a spill response plan.
211.	Brook	Brisson	Trustees for Alaska	98270	159	Direct/Indirect Impacts	Geographic Scope. The discussions in the DEIS regarding the impacts of noise in general and on fish, birds, marine mammals, and subsistence focus heavily on noise-generating activities within or near the program area, especially in the vicinity of Kaktovik. 1923 As a result, they largely fail to address shipping noise along the marine barge route and its resulting impacts on wildlife, habitat, and subsistence activities in the many important marine areas along that route. The DEIS should be revised to address noise impacts from shipping along the marine barge route.	The hypothetical development scenario (Appendix B) is applicable to the program area, and speculation beyond where marine vessel traffic would go is beyond the scope of this analysis. Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally based off the hypothetical development scenario. The BLM does not have authority to regulate marine traffic outside the Coastal Plain.

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212.	Brook	Brisson	Trustees for Alaska	98270	162	Direct/Indirect Impacts	Yet there is no discussion in the DEIS of potential impacts of noise resulting from icebreaking. Furthermore, there is no recognition of icebreaking noise as causing sea ice habitat loss or alteration. Icebreaking noise and disturbance are not addressed anywhere in the DEIS, and this represents a major substantive gap. The DEIS should be revised to include a substantial discussion of icebreaking noise impacts near the program area and along the marine shipping route, and an analysis of the impact of icebreaking on sea ice habitat loss and alteration should be added in section 3.3.5 of the DEIS.1930	The level of specificity for this would be determined at the project-level authorizations. The hypothetical development scenario does not consider barging when icebreaking would be required. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
213.	Brook	Brisson	Trustees for Alaska	98270	167	Direct/Indirect Impacts	The discussion of [shipping and icebreaking] noise impacts in the subsistence section of the DEIS similarly assumes that the ROPs will be highly effective in mitigating impacts,1938 and thus the DEIS understates the potential adverse effects. Where subsistence activities involving marine mammals are expected to be disturbed, the discussion focuses on whales and mentions other marine mammals only in passing.1939 This is inadequate. For example, BLM predicts the effects of noise disturbance on seals will be temporary (less than 5 years), with no lasting demographic effects.1940 Presumably, however, displacement of the majority of seals from the project area in response to noise would have a notable impact on subsistence activities. The discussion should be revised to provide a more accurate analysis of shipping and icebreaking noise impacts on subsistence near the program area and along the marine shipping route.	The text has been updated as appropriate to discuss impacts related to the marine barge route. An additional NEPA analysis would be completed at the project-level authorization.

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214.	Brook	Brisson	Trustees for Alaska	98271	185	Direct/Indirect Impacts	The DEIS repeatedly affirms the idea that “the areas of NSO would have no additional impact relative to Alternative A.”¹³¹⁷ Such a statement neither aligns with scientific understanding, nor with other statements in the DEIS. The DEIS clearly states that “[t]here would be no direct or indirect impacts on terrestrial mammals from post-lease oil and gas activities under Alternative A.”¹³¹⁸ No impacts is then the standard against which NSO areas should be compared. A first issue with the assertion of no impacts in NSO areas is that it assumes effects of development will end at the boundary of NSO areas. The idea of “edge effects” - that conditions around the edge of a habitat patch will often be different than those in the interior of the patch - has long been recognized in landscape ecology.¹³¹⁹ In the context of the Coastal Plain the concern is that effects occurring in the non-NSO areas will “spill over” into the NSO areas. This phenomenon is affirmed in the DEIS in the Recreation section where it states that under Alternative D, “some impacts associated with an anticipated 21 well pads and associated infrastructure would occur inside of the NSO areas. These would include changes to the recreation setting from artificial lighting and alteration of the recreation setting and visitor experiences from the visual presence of infrastructure and vehicles.”¹³²⁰ The analysis of viewshed effects of Coastal Plain development submitted by Stuart Smith confirms that the visual effects of development would extend far across the Coastal Plain.¹³²¹ Many of these impacts could also affect caribou, which are highly visual creatures and rely heavily on sight for predator avoidance.	The text has been revised throughout Chapter 3 to clarify impacts that could occur in NSO areas.

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215.	Brook	Brisson	Trustees for Alaska	98271	187	Direct/Indirect Impacts	Another reason impacts in NSO areas are expected to exceed those under Alternative A is because seismic activity will be allowed across the entire program area.1326 The DEIS clearly notes potential impacts from seismic exploration and, as is noted above, there is reason to conclude impacts may be greater than indicated in the DEIS. Nevertheless, there clearly will be impacts of some sort in the NSO and no leasing areas if seismic activity is allowed there that will differ from the current conditions, which would be maintained under Alternative A.	The text has been revised throughout Chapter 3 to note that seismic activity could occur across the entire program area, including in areas identified as NSO or no leasing areas.
216.	Brook	Brisson	Trustees for Alaska	98271	188	Direct/Indirect Impacts	Finally, NSO stipulations are subject to waivers, exceptions, and modifications across all action alternatives. Indeed, the DEIS expressly acknowledges how particular stipulations may be waived. For example, under Lease Stipulation 2 in Alternative D surface occupancy is prohibited within 0.5 miles of certain waterbodies, except that "[o]n a case-by-case basis, essential pipelines, road crossings, and other permanent facilities may be considered through the permitting process in these areas where the lessee/operator/contractor can demonstrate on a site-specific basis that impacts would be minimal."1327 Similar possibilities for NSO waivers are mentioned in Lease Stipulations 1, 4, 5, and 9.1328 In these instances it is clear that impacts would be different than under Alternative A and must be analyzed. BLM may not claim that no impacts will occur in NSO areas.	Text has been added to Table 2-2 further explaining the applicable waivers, exceptions, or modifications.

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217.	Donald	Walker	—	68	50	Direct/Indirect Impacts	A study of impacts to upland tundra from current exploration on the MacKenzie River Delta, Canada, reported that initial impacts are similar to or somewhat greater than those reported from 2D surveys in the same area 30 years previously. ^{70,71} A recent BLM Environmental Assessment for seismic surveys in northern Alaska stated that “seismic exploration may vary from having no observable effects in some situations to damaging vegetation to the extent that it may take years or even decades to heal. These impacts occur despite existing stipulations on operations, and cannot be further mitigated, given the types of equipment currently used.” ⁷²	The EIS has been updated to include more recent data and studies related to seismic exploration activities.

S.3.11 Economy

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	David	Fuller	—	18480	2	Economy	During the public scoping period I submitted a letter requesting, among other things, that the BLM use nonmarket economic analysis methods specifically to determine impacts to the Existence Value of the millions of acres of unspoiled lands that may be affected, directly and indirectly, by the proposed leases. I was disappointed to read the DEIS and see this statement on page 3-231: “As noted in Affected Environment, quantifying nonmarket values associated with the Arctic Refuge is not part of this analysis.” Please note that this is not actually “noted”, or even mentioned, in the Affected Environment section of the document. In fact, no explanation or rationale is provided as to why the BLM has chosen not to analyze nonmarket values. As you may be aware, BLM Instruction Memorandum 2013-131 provides policy and guidance for the analysis of nonmarket environmental values. A few applicable excerpts from Attachment 1	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope, of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section is focused on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health,

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1. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	of IM 2013-131: "At least a qualitative description of the most relevant nonmarket values should be included for the affected environment and the impacts of alternatives in NEPA analyses involving environmental impact statements (EIS), for both resource management plans (RMP) and project- level decisions." "The use of quantitative valuation methods should contribute to the analysis of one or more issues to be addressed in the environmental analysis supporting planning or other decision-making. A quantitative analysis of nonmarket values in EIS-level NEPA analyses is strongly encouraged where one or more of the criteria provided below apply." The first criterion listed: "A proposed action is likely to have a significant direct or indirect effect (as defined at 40 CFR 1508.8 and 1508.27), and the quality or magnitude of the effect can be clarified through the analysis of nonmarket values. For example, a proposed wind energy installation may affect the viewshed of a nearby community in ways that alter scenic values." "Passive uses concern values attributed to a place, landscape, or ecological condition without direct use or experience. Many Americans will attribute value to the existence of the Arctic National Wildlife Refuge (ANWR) as a wilderness without having been there." "The added time and expense required for original nonmarket studies should not preclude their use by the BLM: many biophysical studies prepared for environmental analyses supporting RMPs or individual project approvals require as great or greater budgets and timeframes." Clearly, the BLM has not followed its own policy and guidance and has chosen instead to ignore impacts to nonmarket environmental values, even when the Existence Value associated with the	are provided in other sections of the EIS.

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1. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Arctic National Wildlife Refuge (ANWR) is used as an example in BLM's own policy memo. In addition, the BLM chose to ignore the substantive comments and peer-reviewed citations that I provided during the public comment period.	(see above)
2.	David	Fuller	—	18480	3	Economy	A thorough nonmarket economic analysis should not be precluded by the arbitrary time limits set in Secretarial Order 3355. The NEPA process for the Coastal Plains leasing should be exempt from Secretarial Order 3355 given the decades of controversy noted above. Note that 40 CFR 1500.8 allows agencies to set time limits but states that the limits must be consistent with the purposes of NEPA and that agencies should consider, among other factors, the degree to which the action is controversial. Not many NEPA analyses are as controversial as this one. As stated in IM 2013-131 "added time and expense required for original nonmarket studies should not preclude their use by BLM".	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section is focused on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
3.	Thomas	Turiano	—	56599	4	Economy	4. There is no analysis of expected revenues.	Table 3-37 on page 3-236 presents the estimated government revenues.
4.	Withheld	Withheld	—	56726	8	Economy	Potential impacts on state employment, labor income, and revenues	The potential impacts on state employment, labor income, and revenues are presented in Tables 3-35, 3-36, and 3-37, respectively (pages 3-234, 3-235, and 3-236).

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5.	gregory	jackson	—	57077	4	Economy	I urge you to delay permitting to allow further study that takes into account the true economic costs of development and potential clean-up costs.	Operators are required to explore and develop the oil and gas resources of leased areas per 43 CFR 3130. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require an additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
6.	Withheld	Withheld	W&M Student Environmental Action Coalition	57137	1	Economy	There is very little financial incentive to open up the Coastal Plains to drilling as experts estimate it could be up to 10x more expensive than drilling in the contiguous United States due to cold and harsh environmental conditions (Alaskaconservation.org). In addition, a majority of our public lands are open to leasing (90% of land managed by BLM) and of the 25.7 million acres leased, only 12.7 million acres are currently being used for energy production (Alaskaconservation.org).	Drilling in the Alaska North Slope is known to be more expensive than drilling in most of the contiguous United States; however, there are currently a number of exploration, drilling, and production activities in the Alaska North Slope that are underway despite the higher cost of drilling in this region. This suggests that these projects in the Alaska North Slope have passed the oil industry's threshold for economic viability. It is not the objective of this EIS to determine the financial/economic viability of development in the Coastal Plain area; however, costs associated with the hypothetical development scenario used for the analysis of the economic impacts were estimated.

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7.	Matthew	Moran	—	57160	1	Economy	We would like to address the ecosystem services that could be reduced or lost if the 1002 Area is developed for oil and gas. Ecosystem services are the benefits that natural ecosystems provide to humanity. These services are often categorized as provisioning (e.g. food), regulating (e.g. climate), supporting (e.g. nutrient cycling), and cultural (e.g. aesthetic and spiritual value). Rigorous assessment of these aspects of the value of the 1002 area were not included in the draft EIS report published late in 2018. While the EIS document discusses the various environmental, social, conservation, and aesthetic values of the area, there is little quantification of these values. For example, in Vol. 1, p. 3-239, the document states, The nonuse and passive use values of the Coastal Plain and its other ecosystem service values (although not quantified in this analysis) would be diminished from their current value by oil and gas leasing development. Stating that ecosystem services values would be diminished, without having an idea of their original value or how much they would be diminished, does not tell a sufficient story. A thorough EIS should quantify these impacts, and there are established methods for doing so. A review of the land-use and ecosystem services literature would provide a variety of approaches for this sort of analysis.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section is focused on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

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8.	Matthew	Moran	—	57160	2	Economy	In our recent study (Turner et al., in review), we performed a comprehensive valuation of the ecosystem services provided by the Arctic National Wildlife Refuge, with a more focused estimation of key services provided by the 1002 Area. For a description of the ecosystem services we estimated, see de Groot et al. (2002). Our results indicate that the Refuge as a whole provides about \$2,060 per hectare in annual ecosystem services and the Coastal Plain portion of the refuge provides \$2,070 per hectare annually. According to our survey of American attitudes, the aesthetic value alone of the Arctic National Wildlife Refuge is \$944 per hectare annually, but that if better informed about the Refuge, the US population would value it at \$1,687 per hectare per year, a value greater than the oil and gas economic impact (Kotchen and Burger, 2007).	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section is focused on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
9.	Withheld	Withheld	—	59376	15	Economy	Over how many years will this project provide job? - no esti-mate in Draft EIS, p 3-234? The EIS explains uses a 50-year cradle-to-crave timeline, but it is not clear how many years of work that will provide the number of jobs estimated in the EIS.	The job estimates provided on page 3-234 cover the exploration, development, and production phases, with the first lease sale scheduled in 2021 and production activities through 2050 (a 30-year timeframe).
10.	Withheld	Withheld	—	59376	16	Economy	Will Alaska Natives get job preference or be training to be able to qualify for a job since they are the ones being displaced/adversely affected from the project?	This level of specificity would be determined at the project-level authorization. There are no existing lease stipulations or state regulations that address local hire preferences.

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11.	Martha	Raynolds	—	67039	14	Economy	Economy This section says it will discuss Arctic Village and Venetie, but then doesn't.	The Affected Environment section includes the communities of Arctic Village and Venetie; the existing population, employment, and total wages are presented in Tables O-1 and O-2 in Appendix O. Baseline socioeconomic conditions in these communities were described in the Economy section. The potential impacts on these two communities are described in the Subsistence Section of the Draft EIS.
12.	Ronald	Yarnell	—	67164	6	Economy	What loss of income & job opportunities will be foregone to wilderness guides, bed & breakfast, hunting guides, air taxi operators, hotels in Alaska communities, etc. A full economic analysis needs to be done to determine the economic effects of oil & gas leasing & development upon these businesses. Additionally a full economic analysis need to be done to determine the total economic impact full development will have on all users.	This issue is addressed in the Recreation Section of the EIS (Section 3.4.6). Section 3.4.6 notes that there are a number of businesses (i.e., air travel operators and chartered polar bear viewing excursion operators) that could be affected by post-leasing activities. New oil and gas development following lease sales would potentially diminish the quality of the recreation setting and visitor experiences, displace visitors and subsistence users, and increase conflicts between users. The loss of income and job opportunities to wilderness guides and other businesses that depend on the recreational experience cannot be quantified without specific information on the magnitude of the reduction in recreational uses in the area. Section 3.4.6 provides a qualitative description of potential impacts on recreational resources.

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13.	Withheld	Withheld	—	69211	8	Economy	How will bonds be developed and what will they be and who will pay them for future clean up and restoration and damages?	Operators would be required to submit a reclamation plan that satisfies the objective of the ROP. Bonding would be determined and required with the specific oil and gas authorization (43 CFR 3134); the BLM would also apply these NPR-A regulations to the Coastal Plain. A reclamation plan would be developed in coordination with applicable federal, state, and local agencies (footnote 1, Table 2-2).
14.	Withheld	Withheld	—	69211	13	Economy	What resources, texts, sources, etc. will be used to allocate a quantitative value to a natural resource to determine the fines and loss such as the monetary value of a walrus, seal, whale, golden eagle, short eared owl, fish, plants, caribou and other natural resources?	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
15.	Peter	Stern	—	69296	83	Economy	Page O-1 Table O-2. The number of people employed needs a big asterisk because much of the employment is seasonal, lasting only a few months. This table makes it seem like there is year around employment.	The discussion of jobs on page 3-234 indicates that jobs during the exploration and development phases are seasonal and temporary. A note was added to the table showing potential employment effects to further emphasize this point.

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16.	Curt	Leigh	—	69329	14	Economy	The economic evaluation in the EIS is also deficient. It considers a very limited range of non oil development economic topics. Even though the EIS identifies a recent increase in tourism (EIS p. 3-148), it fails to project lost tourism jobs or economic activity related to tourism through the fifty year project life. Existence values, future recreational values and other passive use values were specifically excluded from any economic evaluation (EIS p. 3-239). The values of undisturbed arctic habitats, which cannot be recreated even with a substantial budget, are not considered.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
17.	Linda	Serret	—	69357	8	Economy	Over how many years will this project provide job?- no estimate in Draft EIS, p 3-234?	The job estimates provided on page 3-234 cover the exploration (including pre-leasing seismic), development, production, and reclamation and abandonment phases, with the first lease sale scheduled in 2021 and production activities through 2050. Reclamation and abandonment activities could occur beyond 2050.
18.	Linda	Serret	—	69357	9	Economy	Will Alaska Natives get job preference or be training to be able to qualify for a job since they are the ones being displaced/adversely affected from the project?	The BLM does not make assumptions in the analysis regarding preferences for Alaska Native hire or training programs that benefit Alaska Natives. There are no existing lease stipulations or state regulations that address local hire preferences.

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19.	Withheld	Withheld	—	70934	44	Economy	A complete analysis of the economic impacts of tourism in the refuge needs to be conducted and impacts to this sector of the economy need to be considered.	There could be impacts on local, regional, and statewide tourism depending on how the development in the Coastal Plain would affect future visitors. The potential impacts on the recreational resources in the area are presented in Section 3.4.6 of the Draft EIS.
20.	Withheld	Withheld	—	70934	52	Economy	Page 3-233 second paragraph mentions the multiplier effect of in-state purchases but there is no effort to ensure or guarantee any local hire, any in-state service or purchase requirements or any other assurances that money will stay within Alaska. Negotiations which guarantee Alaskans get a fair share should conclude prior to any leasing.	The multiplier effects provided are estimates of the "potential" effects of in-state spending based on existing statewide economic conditions and capacity. There is no explicit assumption of local hire or local purchase requirements considered in the analysis. This will be the prerogative of the future leaseholders.
21.	Tristan	Glowa	—	73594	1	Economy	Section 3.4.10 on economic impacts of this dEIS does not at all consider the adverse economic impacts of path dependence as a result of new oil and gas leasing. There ought to be analyses of the potentially adverse economic impacts – would leasing deepen economic dependence on the oil and gas industry and lead to the phenomenon of path dependence with larger adverse socio-economic impacts. Where is the discussion of worsening potential "Dutch Disease" or "Resource Curse" symptoms for Alaska politics as a result of a new infusion of oil and gas leases? These are established literature in academic studies of the political economy of resource-dependent regions. Particularly as the global energy transition moves to low-carbon fuels, in what ways does this leasing deepen path dependence and lock-in to fossil fuel based development and therefore create adverse socio-economic impacts? There is a risk that this leasing program will in fact hinder Alaska's long-term economic resilience that is not considered in this dEIS.	The EIS states that future oil and gas development in the Coastal Plain region would create additional economic activity in Alaska; however, the State of Alaska determines its own long-term economic strategy.

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22.	Tristan	Glowa	—	73594	2	Economy	The references to state tax revenue are also deficient. Again, new tax revenue for the state government from oil and gas development is portrayed as exclusively positive, without consideration of the challenges for long-term fiscal sustainability. Alaska's dependence on oil and gas tax revenue has led to volatile boom and bust cycles for state government based on the price of oil and other factors. By providing relief from pressure to diversify state revenue sources, this oil and gas leasing could directly stand in the way of sustainable fiscal policy in Alaska. Such an outcome is not considered, but absolutely should	Alaska's fiscal policy is determined by the Alaska legislature. The State's dependence on oil and gas tax revenues and whether it is beneficial or detrimental to the state's long-term sustainability is a value judgment that is up to the State of Alaska and its residents/stakeholders. The EIS presents these estimates as projections of potential revenues given the current fiscal structure in Alaska.
23.	Allen E.	Smith	—	74324	12	Economy	the DEIS fails to evaluate the economic value of the Arctic Refuge coastal plain for the unique values of its wildlife, wilderness, biological services, air and water quality, scientific research, and natural and cultural heritage.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

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24.	Matthew	Rexford	Kaktovik Iñupiat Corporation	74331	5	Economy	3. Incorporate local economic impacts and potential for local capacity building in discussion of impacts. An important aspect that is overlooked in the DEIS is the positive local economic impacts from leasing and development in the Program Area. Although the DEIS correctly describes the benefits the North Slope Borough and State of Alaska stand to gain, the benefits to private land owners, like KIC or Native Allotment holders, are not well described in the DEIS. KIC understands that because KIC's lands are not under BLM's leasing authority, BLM has shied away from their inclusion. While it is appropriate for BLM not to include Native-owned lands in their stipulations, requirements, and restrictions, the indirect benefits and impacts of BLM's proposed leasing program should be included in BLM's analysis. Private, Native-owned land owners may experience a multitude of direct and indirect positive impacts from leasing and development in the Program Area which should be considered by BLM. BLM must analyze the following: * - Indirect benefit of leasing and development in the Program Area which could facilitate development on KIC lands; * Opportunity for Native Allotment holders to benefit from development, access, and/or use of their inholdings; * Capacity building of KIC and other Native-owned buildings for support services of industry programs; and, * Local economic generation as a result of industry's presence in and around Kaktovik. KIC in particular stands to benefit significantly from activity on our land, through support service businesses, contracting, and jobs for our shareholders. We have benefited from resource development across the North Slope as it provides for many of the essential services in Kaktovik.	The EIS already has some discussion regarding potential employment opportunities for residents of Kaktovik; under Section 3.4.10 Economy, Local Public Infrastructure and Local Businesses, the EIS states that "local businesses, including KIC and its subsidiaries, could receive greater revenues during the exploration, development, and production of petroleum resources in the program area." The EIS was also revised to provide additional discussion on potential benefits to Kaktovik and KIC in the environmental consequences section under economic sectors.

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24. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Resource development in the Program Area will also add to these benefits. While commonplace in most of America, amenities like sanitary sewage, running water, electricity, our diesel-powered power plant, K-12 education, and emergency services have only been in place for one generation in our community. This translates into transformative public health impacts, education for our children, workforce development training, good paying jobs in Kaktovik, search and rescue for subsistence users, and more. As we have experienced, the indirect benefits from resource development ripple across the North Slope and often have a greater degree of impact at the local level. Through our local capacity building, leasing could stimulate various contracting opportunities for KIC and jobs for our shareholders like support services, subsistence advisers, environmental analysis, scientific research and more. Discoveries near Kaktovik could transition our diesel-powered plant into more economical and environmentally friendly natural gas. This should all be included in the DEIS.	(see above)

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25.	Withheld	Withheld	—	70934	49	Economy	Page 2-208 in regards to Cumulative Impacts, BLM is remiss in not analyzing the economic effects from development on tourism. The majority of visitors to the Arctic Refuge are guided and nearly all visitors to the program area are flown in via chartered aircraft. The potential for Alternatives B-D to negatively impact this segment of the local economy needs to be reviewed and quantified. Recreational guiding when taken on a whole is a multi-million dollar industry in northern Alaska which employs hundreds of people. The loss or decline of this industry as areas become off-limits, or as visitor experience declines or due to a change in perception about the region would affect, hotels, restaurants, flight services, guide services, outdoor retailers, etc.	This issue is addressed in the Recreation Section of the EIS (Section 3.4.6). Section 3.4.6 notes that there are a number of businesses (i.e., air travel operators and chartered polar bear viewing excursion operators) that could be affected by post-leasing activities. New oil and gas development following lease sales would potentially diminish the quality of the recreation setting and visitor experiences, displace visitors and subsistence users, and increase conflicts between users. The loss of income and job opportunities for wilderness guides and other businesses that depend on the recreational experience cannot be quantified without specific information on the magnitude of the reduction in recreational uses in the area. Section 3.4.6 provides a qualitative description of potential impacts on recreational resources.

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26.	Ronald	Yarnell	—	98123	1	Economy	The least you guys could do is figure out the actual economic impact this is going to be having on recreational visitors in the Arctic Refuge, especially the guides and outfitters. And that should include hunting guides, river guides, backpack guide, bird guides, all guide -- permitted guide operations in the Arctic Refuge. No mention is made about any of the economic impacts that are going to be made upon us, other than saying there is going to be an impact. Tell us the dollars. You can figure it out. So that was just the recreational part.	This issue is addressed in the Recreation Section of the EIS (Section 3.4.6). Section 3.4.6 notes that there are a number of businesses (i.e., air travel operators and chartered polar bear viewing excursion operators) that could be affected by post-leasing activities. New oil and gas development following lease sales would potentially diminish the quality of the recreation setting and visitor experiences, displace visitors and subsistence users, and increase conflicts between users. The loss of income and job opportunities for wilderness guides and other businesses that depend on the recreational experience cannot be quantified without specific information on the magnitude of the reduction in recreational uses in the area. Section 3.4.6 provides a qualitative description of potential impacts on recreational resources.

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27.	Ronald	Yarnell	—	98124	2	Economy	Not one thing is mentioned about the loss of dollars. If this oil development occurs on this area, I won't be taking trips across there. I won't be leading people to see this wonderful area. Who is going to float through Prudhoe Bay? It's not much fun. I've done it. It's not much fun. So even with the seismic exploration activity that occurred there during the 1980s, when we are floating these rivers and walk across the gravel bars and climb up on the tundra bank, if you walk just a little ways along that bank, and you will see a straight line going off as far into the horizon as you can see. And that was from 2-D exploration, which was basically setting these grids up every mile or so.	This issue is addressed in the Recreation Section of the EIS (Section 3.4.6). Section 3.4.6 notes that there are a number of businesses (i.e., air travel operators and chartered polar bear viewing excursion operators) that could be affected by post-leasing activities. New oil and gas development following lease sales would potentially diminish the quality of the recreation setting and visitor experiences, displace visitors and subsistence users, and increase conflicts between users. The loss of income and job opportunities for wilderness guides and other businesses that depend on the recreational experience cannot be quantified without specific information on the magnitude of the reduction in recreational uses in the area. Section 3.4.6 provides a qualitative description of potential impacts on recreational resources.

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28.	Brook	Brisson	Trustees for Alaska	98270	101	Economy	First, the description of the affected environment is incomplete and inaccurate. Our scoping comments requested that BLM compile accurate and up-to-date visitor use and recreation data, along with associated economic benefits. While the DEIS includes some basic information on visitor use and recreation data, it fails to include information about the direct and indirect economic benefits associated with wilderness-dependent recreation.1768	This issue is addressed in the Recreation Section of the EIS (Section 3.4.6). Section 3.4.6 notes that there are a number of businesses (i.e., air travel operators and chartered polar bear viewing excursion operators) that could be affected by post-leasing activities. New oil and gas development following lease sales would potentially diminish the quality of the recreation setting and visitor experiences, displace visitors and subsistence users, and increase conflicts between users. The loss of income and job opportunities for wilderness guides and other businesses that depend on the recreational experience cannot be quantified without specific information on the magnitude of the reduction in recreational uses in the area. Section 3.4.6 provides a qualitative description of potential impacts on recreational resources.
29.	Brook	Brisson	Trustees for Alaska	98270	106	Economy	Nor does the impacts analysis address the economic impacts associated with the permanent degradation of the area's primitive recreation setting. In a few places, the DEIS acknowledges that the ability of operators to provide clients with desired recreation experiences would affect commercial operators.1773 But it fails to even address - much less quantify - the associated economic impacts.1774	Section 3.4.6, Recreation, describes how changes in resource conditions would directly influence the quality of recreation experiences obtained through commercial operators and potentially diminish the ability of operators to provide clients with desired recreation experiences, resulting in fewer permitted operators and potential displacement to areas outside the program area.

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30.	Renae	Smith	Counsel for Environmental Protection	74336	23	Economy	Coastal Plain will displace jobs in oil production elsewhere in the United States. ¹³⁵ Instead, the DEIS estimates that during the production phase, the proposed Leasing Program would generate an average of 730 direct jobs and over 3,000 indirect jobs. Given BLM's assumption that 96 percent of Coastal Plain production will replace other U.S. production, it follows that the vast majority of jobs created through the proposed Leasing Program would replace other oil production jobs within the United States. Yet, BLM does not consider or even acknowledge this possibility. BLM cannot rationally rely on a "perfect replacement theory" to downplay greenhouse gas emissions and climate change impacts but ignore this theory when calculating the number of jobs the project will create. ¹³⁶	The EIS focuses on economic impacts at the local, regional, and statewide level; a cost-benefit analysis is outside the scope of analysis of the EIS.
31.	Renae	Smith	Counsel for Environmental Protection	74336	23	Economy	Further, the DEIS's use of a perfect replacement theory for oil production contradicts BLM's analysis of the proposed Leasing Program's economic impacts. In calculating the direct and indirect impacts to the job market, the DEIS does not consider whether the jobs created in the	The EIS focuses on economic impacts at the local, regional, and statewide level; a cost-benefit analysis is outside the scope of analysis of the EIS.
32.	Withheld	Withheld	—	82285	3	Economy	Oil from the Arctic Refuge would have little or no impact on oil prices. According to the Environmental Protection Agency, increasing vehicle fuel efficiency would save more oil per day than the Refuge would provide in one year of peak production. We simply cannot drill our way to lower prices or energy independence and it would be incredibly short-sighted and unnecessary to sacrifice one of the last remaining unspoiled places on earth for a small amount of oil. The Arctic Refuge is part of our national heritage and is the only conservation unit that protects, undisturbed, a complete spectrum of the arctic ecosystems in North America.	Acknowledged. There is no statement in the EIS that suggests that oil production from the Coastal Plain region would lower global oil prices.

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33.	Renae	Smith	Counsel for Environmental Protection	74336	22	Economy	This perfect replacement theory, i.e. the concept that 96 percent of Coastal Plain oil production will replace other production, is completely unsupported in this DEIS. BLM provides no meaningful evidence to support its assumption that the vast majority of oil produced in the Coastal Plain will displace other likely cheaper oil production in the United States, ¹³³ let alone global supplies. Nor does BLM explain how it anticipates that Coastal Plain production will interact with other United States, again likely cheaper, production or global production. By assuming that nearly all of the oil generated from the proposed Leasing Program will replace other production, the DEIS may be significantly underestimating the true potential impact of the proposed Leasing Program on greenhouse gas emissions and associated climate change, running afoul of recent judicial rejections of reliance in perfect replacement theory. ¹³⁴ In effect, BLM has wrongly cited certain economic assumptions to avoid taking a hard look at the extent to which Coastal Plain oil production will impact production and associated climate impacts. This NEPA does not permit.	The EIS focuses on economic impacts; a cost-benefit analysis is outside the scope of analysis of the EIS.

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34.	Brook	Brisson	Trustees for Alaska	81368	3	Economy	Also lacking are the data BLM used to forecast jobs and income: the annual number of wells developed, the number of wells producing each year, and production per well per year. These data are used in the DEIS' calculation of employment and income effects, and tax revenues (p. 3-234). Although assumptions for the total number of wells (per production pad, p. B-7) and annual operating costs (dollars per well and per barrel of oil, p. 3-233) are given, by not providing the annual figures that these costs are multiplied by in the calculation of annual totals, the public cannot evaluate the economic impact analysis results (pages B-23 to B-25).	The assumptions used in quantifying the potential economic impacts of post-lease development activities are presented in Section B.6, Method and Assumptions for Hypothetical Development Scenario Projections of the EIS, and also on page 3-233 of the Economy section. Additional detail regarding the assumptions has also been added to the EIS. The EIS has been revised to provide additional detail regarding the number of wells and production. This additional information is presented in Appendix B of the EIS.
35.	Renae	Smith	Counsel for Environmental Protection	74336	11	Economy	As discussed supra in Section II A., BLM's unreasonably narrow purpose and need statement forecloses evaluation of the potential for the alternatives considered in the DEIS to accomplish Congress's intended purpose: to generate revenue to offset tax revenue losses from the Tax Cuts and Jobs Act. A thorough analysis that accounts for projected market conditions, the high cost of development in the Coastal Plain, and the convergence of multiple factors that will likely depress U.S. oil demand and price demonstrates, as discussed below, that lease sales very likely will generate less revenue than projected, and that leased areas may never become economically viable and generate royalty payments. ⁷⁰	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Renae	Smith	Counsel for Environmental Protection	74336	13	Economy	Recent analyses estimate that the price of oil must reach between \$78 and \$90 per barrel for drilling on the Coastal Plain to become economically viable. ⁷⁹ But global oil prices for the past few years have ranged between \$55 and \$60 per barrel, ⁸⁰ and crude oil futures are trading at \$70 per barrel or lower-a far cry from the estimated \$78 to \$90 per barrel breakeven price needed to make Coastal Plain drilling projects viable. ⁸¹	The economic viability of development in the Coastal Plain was not evaluated; an EIS only addresses the potential environmental consequences of a proposed action. The potential leaseholders will make that evaluation prior to bidding on leases. The development scenarios used to evaluate the economic impacts considered the economic costs of development and potential production from fields of assumed sizes.
37.	Renae	Smith	Counsel for Environmental Protection	74336	14	Economy	analysts estimate that lease sales in the Coastal Plain would likely generate a total of anywhere from \$37.5 million to \$76 million. ⁸⁵ But leases sale prices in the Coastal Plain would be lower than some high volume areas of the NPRA. Even with higher price expectations, Coastal Plain lease sale prices would most likely average roughly \$25 to \$30 per acre. ⁸⁶ In this price range, successful leasing of the of the Coastal Plain would likely yield total lease revenues ranging from about \$25 million for an auction offering the minimum or low-end lease sale acreage to \$40 million at the high end of offered acreage. ⁸⁷	There were no estimates of lease sales and payments provided in the EIS. It is unclear at this point what the terms of the lease sales will be. As stated on page 3-231 of the Draft EIS, "direct impacts from issuing oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would include the federal government receiving bonus bids and rental payments from leasing; however, these payments cannot be quantified because there is not enough specificity at this time regarding the lease terms."

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38.	Renae	Smith	Counsel for Environmental Protection	74336	14	Economy	Uncertainty about future oil prices and, thus, about the economic viability of Coastal Plain oil production would be reflected in the bonus bid and lease price bidders may be willing to pay. 82 The CBO in its \$2.2 billion (\$1.1 billion federal) revenue generation estimate acknowledges the uncertainty in its bonus bid and lease sale estimates, noting that "[p]otential bidders might make assumptions that are different from CBO's, including assumptions about long-term oil prices, production costs, the amount of oil and gas resources in ANWR, and alternative investment opportunities."83 Recent lease sales in the nearby National Petroleum Reserve in Alaska (NPRA)- where substantial deposit volumes of technically available oil have been confirmed-have ranged from roughly \$5 to \$18 per acre, with a weighted average of \$8.81 per acre.84	The Draft EIS did not provide estimates of bonus bids and rental payments. As stated on page 3-231 of the Draft EIS, "direct impacts from issuing oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would include the federal government receiving bonus bids and rental payments from leasing; however, these payments cannot be quantified because there is not enough specificity at this time regarding the lease terms."
39.	Renae	Smith	Counsel for Environmental Protection	74336	15	Economy	Beyond lease sale revenue, if oil prices fail to raise above the breakeven point over the next 20 years, as some current projections indicate, any Coastal Plain lease sale would not result in actual oil development and would thus provide no royalty payments to offset federal revenue losses from the Tax Cuts and Jobs Act. 88 Even if development does become economically viable with oil prices rising over \$100 per barrel, as U.S. EIA's analysis assumes, potential royalty payments would not begin until 2031, and, together with lease sales and bonus bid revenue and rent payments, total revenue generation may still be well under the total intended \$2.2 billion, with \$1.1 billion for federal deposit. 89	There is considerable uncertainty regarding oil prices and potential lease revenues. The EIA's assumptions and scenarios reflect one possibility of future conditions, and the assumptions/scenarios used in the Draft EIS reflect another possibility. A discussion of this uncertainty is provided in the hypothetical development scenario section.

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40.	Renae	Smith	Counsel for Environmental Protection	74336	20	Economy	All told, the global demand for oil will likely soon begin to decline significantly. 118 As discussed in Section II. C. 2, <i>infra</i> , BLM's DEIS rests on the flawed assumption that oil demand will increase over the next 70 years. That is unlikely and would be inconsistent with current trends that are poised to greatly reduce demand. 119 In sum, there is no need for any oil or gas produced by the proposed Leasing Program, and all of the alternatives considered in the DEIS are unlikely to generate revenue at a level approaching the CBO's projections to offset the cost of the Tax Cuts and Jobs Act. By failing to include in its alternatives analysis any assessment of potential revenue generation, including full and robust evaluation of all the relevant factors discussed above, BLM's alternatives analysis does not satisfy NEPA because it utterly fails to illuminate the real and significant tradeoff between the Leasing Program's illusory benefits and its substantial, long-lasting and irreversible environmental harms.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

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41.	Renae	Smith	Counsel for Environmental Protection	74336	30	Economy	reducing carbon dioxide (CO2) emissions when analyzing the costs and benefits of agency action.171 NEPA requires that where an agency quantifies the benefits of a proposed action, the agency must also quantify the costs, including the costs associated with greenhouse gas emissions, to ensure that the agency accurately analyzes the environmental consequences of its proposed action. 172	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Renae	Smith	Counsel for Environmental Protection	74336	30	Economy	The DEIS also arbitrarily refuses to utilize the social cost of carbon-or any other meaningful metric-to accurately weigh the costs and benefits of the proposed project. 170 The social cost of carbon is a federally-developed tool to assist agencies in evaluating the social benefits of	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. BLM has reviewed this comment and determined that the social cost of carbon is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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43.	Renae	Smith	Counsel for Environmental Protection	74336	31	Economy	Thus, BLM attempts to distinguish economic benefit from economic impact calculations, asserting that the economic benefit metric accounts for changes in social welfare. 174 But both are metrics that quantify the economic result of a proposed action. And the case law makes clear that where BLM quantifies the economic results of a proposed action, it must also quantify the climate costs of that action so that the agency can accurately evaluate the consequences of its decision. 175 Accordingly, it is arbitrary and unlawful for BLM to quantify and compare other benefits or impacts of the proposed Leasing Program without taking a similar approach to quantifying the costs or impacts of greenhouse gas emissions.176	This issue is addressed in the Climate Change/Greenhouse Gas Emissions section of the EIS.
44.	Withheld	Withheld	—	75145	14	Economy	The DEIS failed to identify the economic value of the Arctic Refuge. ?The DEIS recognized that the Arctic Refuge has significant 'ecosystem service values', that is, the biological resources of this land are highly valuable. BLM recognized that their value would be harmed by oil and gas leasing, but it did not conduct an economic analysis to quantify or identify these values or impacts. The DEIS failed to include an economic projection of revenue from lease sales.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

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45.	Withheld	Withheld	—	79888	7	Economy	The scope of the DEIS is too limited and did not consider the full range of oil and gas activities. BLM is required to consider all of the environmental impacts of the proposed oil and gas program. The DEIS failed to identify the economic value of the Arctic Refuge. The DEIS recognized that the Arctic Refuge has significant 'ecosystem service values', that is, the biological resources of this land are highly valuable. BLM recognized that their value would be harmed by oil and gas leasing, but it did not conduct an economic analysis to quantify or identify these values or impacts. The DEIS failed to include an economic projection of revenue from lease sales.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. There were no estimates of lease sales and payments provided in the EIS. It is unclear at this point what the terms of the lease sales will be. As stated on page 3-231 of the Draft EIS, "direct impacts from issuing oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would include the federal government receiving bonus bids and rental payments from leasing; however, these payments cannot be quantified because there is not enough specificity at this time regarding the lease terms."

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46.	Jason	Schwartz	Institute for Policy Integrity	80216	6	Economy	In a competitive market, like for oil or gas, the market price reflects aggregate willingness to pay based on social utility. Therefore, in calculating revenue, BLM has presented a monetized estimate of the supposed social benefits of the fossil fuel development under the Coastal Plain leasing program. Consequently, BLM must also use readily available tools to monetize the social costs of the fossil fuel development. It is arbitrary to apply inconsistent protocols for analysis of some effects compared to others, and to monetize some effects but not others that are equally monetizeable.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
47.	Steven	Amstrup	Polar Bears International	81368	8	Economy	The DEIS also does not include additional causes of delay identified by the U.S. Department of Energy's Energy Information Administration (EIA). ¹ The EIA assumes that the "first production from ANWR occurs at least 10 years after the first lease sale" ² and identifies additional factors that could significantly delay Coastal Plain crude oil development and production. These include inevitable legal challenges to the BLM's leasing program, approval of seismic data collection, and approval of specific oil field projects. The EIA also notes that hostile weather conditions and limited "weather windows" during which to explore and drill could affect the timing and cost of development. ³	The timing of lease sales is set by statute, but the timing of subsequent development on leased lands is uncertain. This Draft EIS considers just one potential hypothetical future development scenario in the area; the EIA's analysis considers a different future scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Megan	Williams	o.b.o. Trustees for Alaska	81368	9	Economy	The DEIS states that delays "would therefore also delay potential employment and income effects, as well as revenues that could accrue to the local, State, and federal governments" (p. 3-238). Yet the document does not provide an alternative timeline allowing for these potential events. An alternative development timeline that incorporates these likely sources of delay would provide a more realistic scenario.	The timing of lease sales is set by statute, but the timing of subsequent development on leased lands is uncertain. This Draft EIS considers just one potential hypothetical future development scenario in the area.
49.	Steven	Amstrup	Polar Bears International	81368	10	Economy	The DEIS should have provided all the information used to develop the economic impact analysis to allow the public to critically assess the results. The economic impact estimates (jobs and labor income) rely on the assumed timeline (number of years of exploration, development, and production), number of wells developed and producing per year, production per well per year, and related annual costs. Assumed values for these inputs are not provided in the DEIS and thus there is insufficient information provided to support the economic impacts presented in the DEIS (sections B.10 and 3.4.10).	The EIS has been revised to provide additional detail regarding the number of wells and production. This additional information is presented in Appendix B of the EIS.
50.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	12	Economy	In terms of the economic impacts associated with development expenses, it is not clear if the economic impact analysis distinguished between development expenditures incurred within vs. outside Alaska; annual values for these inputs are not provided.	The estimates of indirect effects (multiplier effects) considered the existing capacity of Alaska industries to meet the estimated increase in demand for goods and services as a result of the development and production activities assumed in the analysis. The amount of local/in-state purchases varies by economic sector and is based on the regional purchase coefficients that are embedded in the IMPLAN model.

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51.	Megan	Williams	o.b.o. Trustees for Alaska	81368	13	Economy	The forecasted federal revenues in the DEIS should have included the amount of revenue expected each year through the post-production phase (beyond 2050), clearly defined the oil production volume the revenues are based on, and addressed how revenues would affect the federal deficit - the very justification for the Coastal Plain leasing program. The DEIS asserts that there is not sufficient information to estimate federal revenue generated in the next ten years, and provides estimates through 2050. BLM estimates of annual and total federal government revenue expected from the hypothetical baseline scenario for development are provided in Table B-8, but the volume of oil production (total and annual) upon which these estimates are calculated is not stated in this section.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain. Table 3-37 presents estimated federal revenues; the potential revenues could help reduce the federal deficit. The EIS has been modified to provide production volumes (see Appendix B).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Megan	Williams	o.b.o. Trustees for Alaska	81368	18	Economy	The DEIS should have included a thorough discussion of the U.S. and global energy market projections, given that it contends that Coastal Plain production would increase crude oil supplies and demand. In addition, the assumptions and input values used in the market simulation modeling should have been presented in the document. Coastal Plain production is purported to "contribute to ... increase in energy security (or reduced reliance on imported petroleum products)" (p. 3-230). However, the EIA projects this is already occurring without any production from the Coastal Plain, with the U.S. expected to be a net exporter of all energy, including petroleum and other liquid fuels, after 2020.^{8,9} Even with crude oil production from the Coastal Plain, the EIA forecasts the U.S. will return to being a net importer of liquid fuels by mid-century due to declines in domestic production and increases in domestic gasoline consumption after about 2040.¹⁰ Coastal Plain production forecasts are contingent on future global prices, shown by EIA estimates of zero Coastal Plain crude oil production (from 2013 to 2050) in a Low Oil Price scenario, up	The Draft EIS (pages 3-7 and 3-8) provides a thorough discussion of U.S. and global oil market projections. It references a Bureau of Ocean Energy Management white paper on energy market substitutions and downstream greenhouse gas emissions estimates for the Coastal Plain leasing program (BOEM 2018a), which provides greater detail of energy market impacts, assumptions, and input values. CEQ NEPA regulation 40 CFR 1502.21 provides that agencies shall incorporate material into an EIS by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The quoted Draft EIS statement that Coastal Plain production would contribute to the Nation's economy and an increase in energy security is consistent with the EIA projection that this trend is already underway throughout the U.S.

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53.	Steven	Amstrup	Polar Bears International	81368	19	Economy	to 6.8 billion barrels in a High Oil and Gas Resource and Technology scenario.11 EIA further highlights the significance of global prices, noting that Arctic oil and natural gas resources are more expensive, riskier, and take longer to develop than comparable deposits found elsewhere in the world.12 Regionally, the EIA projects a decline in gasoline demand on the West Coast, where much of Alaskan crude oil is usually processed, through most of the period 2018 to 2050 and posits that it is likely some additional oil production would be exported to Asia.13 The decline in demand for gasoline on the West Coast could mean "tepid demand for additional crude oil to be processed to meet end-use consumption in the traditional market for Alaskan crude oil production."14 The DEIS provides little justification of and information to support the conclusion that Coastal Plain production is projected to increase U.S. oil demand (p. 3-7), therefore it is impossible for the public to determine the validity of the results or if they are even useful.	The Draft EIS (pages 3-7 and 3-8) provides a thorough discussion of U.S. and global oil market projections. It references a Bureau of Ocean Energy Management white paper on energy market substitutions and downstream greenhouse gas emissions estimates for the Coastal Plain leasing program (BOEM 2018a), which provides greater detail of energy market impacts, assumptions, and input values.
54.	Steven	Amstrup	Polar Bears International	81368	24	Economy	the DEIS should have taken a hard look at the magnitude and timing of impacts of the proposed oil and gas leasing program and alternatives on the federal deficit. Indeed, the premise for including the Coastal Plain oil and gas leasing program in the Tax Act ²¹ was an assumption - based on an estimate from the Congressional Budget Office ²² - that the program would generate \$2.2 billion in "bonus bids" by 2027 (ten years from enactment of legislation), of which \$1.1 billion would reduce the federal deficit. ²³ Yet, the DEIS does not attempt to estimate direct federal impacts from issuing oil and gas leases before production, e.g., bonus bids and rental payments (as noted in "Incomplete Federal Revenue Forecast").	As stated on page 3-231 of the Draft EIS, "direct impacts from issuing oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would include the federal government receiving bonus bids and rental payments from leasing; however, these payments cannot be quantified because there is not enough specificity at this time regarding the lease terms." However, the potential federal revenues from royalties and taxes (presented in Table 3-37) would help reduce the federal deficit.

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55.	Brook	Brisson	Trustees for Alaska	81368	25	Economy	The description of the regional economy (defined as the North Slope Borough, or NSB) should have considered all sectors of the region's economy and the potential effects of proposed development on each. The DEIS mentions only the oil and gas industry and includes nonresidents in the region's workforce: "Oil and gas exploration and development is the primary industry in the NSB and the largest employer of the region's industrial workforce, including nonresidents" (p. 3-229). However, "a large portion of the earnings are not spent in the local and regional economy, as most workers reside permanently outside the NSB" (p. 3-229). Although the DEIS mentions the local government as a "major" employer, it ignores other sectors. According to the U.S. Census Bureau, accommodation and food services, administrative and related services, wholesale trade, health care, and transportation and	The EIS has been revised to provide additional detail regarding employment and wages in other sectors of the regional economy.
56.	Brook	Brisson	Trustees for Alaska	81368	25	Economy	warehousing sectors accounted for 48% of North Slope Borough employees and 40% of annual payroll in 2016. ²⁴ In contrast, less than 0.5% of the oil and gas jobs are held by residents of the North Slope Borough (p. 3-197 and p. 3-229). The DEIS should include a complete overview of the region's businesses, employment, and wages as well as an adequate discussion of the potential effects of oil and gas development on these sectors of the economy.	Additional detail regarding employment and wages in other sectors of the regional economy has been added to Appendix O.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Steven	Amstrup	Polar Bears International	81368	28	Economy	An analysis of the substantial non-market and non-use values of the Coastal Plain should have been included in the DEIS. The document recognizes the existence of biological and ecological resources and values associated with the Arctic National Wildlife Refuge. But, despite recognizing the potential for economic losses resulting from damage to these resources and ecosystem services, without justification the DEIS dismisses these costs by stating "quantifying nonmarket values associated with the Arctic Refuge is not part of this analysis" (p. 3-231; the text references the Affected Environment section but there is no mention of nonmarket values therein.) The DEIS also acknowledges oil and gas development would negatively affect nonuse values, yet does not identify what the effects might be or why they are not quantified: "non-use and passive use values of the Coastal Plain and its other ecosystem service values (although not quantified in this analysis) would be diminished from their current value by oil and gas leasing development" (p. 3-239).	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
58.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	3	Economy	ASRC and KIC are entitled to develop our lands and natural resources under ANCSA, ANILCA, and the 2017 Tax Act. Resource development in the Program Area will indirectly spur development on Native owned land and these benefits should be captured in BLM's analysis.	Additional discussion on potential benefits to Kaktovik and KIC has been added in the environmental consequences section under economic sectors. The Draft EIS already has some discussion regarding potential employment opportunities for residents of Kaktovik; under Local Public Infrastructure and Local Businesses, the EIS states that "local businesses, including KIC and its subsidiaries, could receive greater revenues during the exploration, development and production of petroleum resources in the program area."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	36	Economy	In general, ASRC finds BLM assessment of the positive economic impacts from oil and gas leasing in the Program Area to be accurate, however, BLM should include the economic benefit of development on Native land which could be spurred by resource development on federal land. This element is not currently addressed in the DEIS	Development in the Coastal Plain could spur additional exploration and development in the region, including on adjacent Native land. The EIS has been revised accordingly.
60.	Robin	Stebbins	—	83751	5	Economy	A Monte Carlo analysis of the variables would have been a much more representative way of expressing the best understanding of the potential returns. There is no analysis of macroeconomic changes driven by climate change, like carbon taxes or other structural changes in the energy economy. Despite worldwide trends and expert advice calling for rapid climate action in the next 12 years, this DEIS only considers the most optimistic energy future	Given the broad uncertainty of the variable values at this initial leasing stage, a Monte Carlo analysis or more detailed discussion of macroeconomic trends would not provide a more accurate projection of the potential returns.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	8	Economy	The DEIS failed to address the economic value of the Arctic Refuge. It recognized that the Arctic Refuge has significant 'ecosystem service values, e.g., the biological resources of this land are highly valuable. BLM recognized that their value would be harmed by oil and gas development, but it did not conduct an economic analysis to quantify or identify these values or impacts. The DEIS failed to include an economic projection of revenue from lease sales	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Withheld	Withheld	—	92581	2	Economy	There is intrinsic an economic value in the Arctic Refuge as wildlands. The DEIS recognized that the Arctic Refuge has significant 'ecosystem service values', and that this value would be harmed by oil and gas leasing. The DEIS does not, however, conduct an economic analysis to quantify or identify these values or impacts and fails to include an economic projection of revenue from lease sales.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
63.	Karen	Bollinger	—	94054	8	Economy	There is no analysis of expected revenues, despite the projected \$2 billion in revenue (\$1 billion to the State of Alaska and \$1 billion to the federal government) being a major factor in allowing attachment of this rider to the Tax Act.	Table 3-37 (page 3-236) of the Draft EIS presents the estimated potential government revenues. These revenues could help reduce the federal deficit.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Withheld	Withheld	—	94435	7	Economy	The DEIS failed to identify the economic value of the Arctic Refuge. The DEIS recognized that the Arctic Refuge has significant 'ecosystem service values', that is, the biological resources of this land are highly valuable. BLM recognized that their value would be harmed by oil and gas leasing, but it did not conduct an economic analysis to quantify or identify these values or impacts. The DEIS failed to include an economic projection of revenue from lease sales. The DEIS failed to assess the immense value of wilderness and Refuge lands to air and water quality, wildlife, scientific inquiry, human well-being, and America's natural and cultural heritage.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Withheld	Withheld	—	94611	2	Economy	The US and by extension the BLM have a legal as well as an ethical responsibility to limit the damage caused by these fuels. Even with a moderate social cost of carbon estimate, the impact of burning the fossil fuels likely to be developed in the Refuge is several billion dollars. It is likely that the companies and governments responsible for this damage will be forced to pay, making the lease sale in consideration an economic liability.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. BLM has reviewed this comment and determined that the social cost of carbon is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Jason	Schwartz	Institute for Policy Integrity	94627	3	Economy	BLM fails to quantify any ecosystem service values, non-use values, or passive use values. Failure to quantify an otherwise quantifiable environmental cost effectively treats that environmental cost as worthless, and is arbitrary when the agency chooses, as BLM does here, to monetize the action's alleged economic benefits.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
67.	Jason	Schwartz	Institute for Policy Integrity	94627	12	Economy	BLM inconsistently fails to apply any substitution analysis to its estimates of projected oil and gas production, or related government revenue and other economic effects, and thereby misleadingly overinflates the proposed action's alleged economic benefits. The inconsistent treatment of economic benefits versus climate costs is arbitrary.	The EIS focuses on economic impacts; a cost-benefit analysis is outside the scope of analysis of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Jason	Schwartz	Institute for Policy Integrity	94627	22	Economy	it would seem that for the purposes of calculating royalties, BLM is using the region's total production figures, is not applying substitution analysis, and is not assuming that increased production from the Coastal Plains at least partly if not largely offsets other sources of energy. Yet according to the substitution analysis that BLM applies to estimate downstream emissions, every barrel leased from the Coastal Plains will come partly at the expense of, for example, production of oil and gas on other federally leased lands. Production from such other substitute sources would have also generated royalty and tax revenues. But while BLM uses assumption about substitute energy sources to offset its estimates of downstream emissions, the agency does not offset its estimate of government revenue expected from this leasing action by the revenue that substitute energy sources would have provided. The result is an inconsistent methodological approach to the leasing action's alleged monetized economic benefits versus the action's unmonetized climate costs, which may have the effect of overestimating benefits while underestimating costs.	The EIS focuses on economic impacts; a cost-benefit analysis is outside the scope of analysis of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	The National Research Council lists myriad ecosystem service values that may be significant in ANWR, may be threatened by the proposed action, and may be quantifiable given existing literature. Among the potentially relevant ecosystem service values that the National Research Council lists for aquatic and related terrestrial ecosystems are:127 * Direct ecosystem service values: fishing, wild resources, potable water and other water resources, recreation, genetic material and the maintenance of biodiversity, and scientific and educational opportunities * Indirect ecosystem service values: nutrient retention and cycling, purification of air and water, flood control, storm protection, habitat function, shoreline and river bank stabilization * Nonuse ecosystem service values: cultural heritage, resources for future generations, existence of species, existence of wild placesMany of these key values can be quantified and monetized.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

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70.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	the greater costs associated with harsh weather and lack of infrastructure in the Arctic Refuge mean that oil and gas development would be far more expensive in this area than drilling in the lower 48 states-31 times greater by one estimate from the American Petroleum Institute-all of which will contribute to lower bonus bids.¹¹⁹ Other estimates state that drilling in the Arctic may be up to 10 times more expensive than drilling in the lower 48 states.¹²⁰ It would cost more to transport any oil or gas developed in the Coastal Plain to market, given the lack of infrastructure and long distance, increasing costs for producers. Developers would also be competing with oil and gas development in other Alaskan regions, including the National Petroleum Reserve, which already have existing drilling infrastructure, lowering expected bids relative to these other regions. ¹¹⁹ Corn et al., CONGRESSIONAL RESEARCH SERVICE, supra note 9 at 15. ¹²⁰ Perry and Alkire, KEY-LOG ECONOMICS, supra note 106 at 33.	Acknowledged.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	There is a substantial amount of literature on valuing ecosystem services in general, ¹²⁴ and a number of papers on valuing ecosystems services in Alaska and ANWR specifically. ¹²⁴ See e.g., National Research Council 2005. Valuing Ecosystem Services: Toward Better Environmental Decision-Making. Washington, DC: The National Academies Press. https://doi.org/10.17226/11139 .; Costanza, R., R. d'Arge, R. deGroot, et al. 1997. The value of the world's ecosystem services and natural capital. Nature 387: 253-260.; Bishop, R.C., and M. P. Welsh. 1992. Existence values in benefit-cost analysis and damage assessment. Land Economics 68(4):405-417.; Freeman, A.M., III. 1993a. The Measurement of Environmental and Resource Values: Theory and Methods. Washington, D.C.:Resources for the Future.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.
72.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	A 1992 study on the Exxon Valdez oil spill "revealed that many Americans who have not visited Alaska and never intend to do so nevertheless place high values on maintaining the pristine and unique but fragile coastal and aquatic ecosystems of Alaska." ¹³³ This study found that the total value to the U.S. population to prevent a spill like Exxon Valdez was around \$5.38 billion. ¹³⁴ In connection to the Exxon Valdez spill, "the District of Columbia Circuit of the U.S. Court of Appeals held that nonuse value should be part of the economic damages due to releases of oil or hazardous substances that injure natural resources." ¹³⁵ While this case is specific to an oil spill, it is reasonable that a court would find that nonuse value should also be taken into consideration as economic damages to	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment,

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72. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	natural resources by other means. A more recent study found that the total value to the U.S. population to prevent a spill like Exxon Valdez was around \$10.87 billion.¹³⁶ Another study on ANWR specifically, by the University of Alaska Anchorage, finds that "U.S. households receive up to \$30 billion worth of economic value per year from the continued preservation of Alaska's federal conservation units in their undeveloped state."¹³⁷ So even though millions of Americans will never visit the refuge, BLM has ample evidence to assume that they value keeping it in its pristine state. ¹³⁴ Carson, R.T., et al. 1992. A Contingent Valuation Study of Lost Passive Use Values Resulting From the Exxon Valdez Oil Spill. Report to the Attorney General of the State of Alaska. Available at: https://mpa.ub.uni-muenchen.de/6984/1/MPRA_paper_6984.pdf; Carson, R.T., et al., 2003. Contingent valuation and lost passive use: damages from the Exxon Valdez oil spill. Environmental and Resource Economics 25, 257-286. ¹³⁵ Liu, S. et al., Valuing ecosystem services: Theory, practice, and the need for a transdisciplinary synthesis. Ann. N.Y. Acad. Sci. 1185 (2010) 54-78, at 61. ¹³⁶ Carson, R.T., et al., 2003. Contingent valuation and lost passive use: damages from the Exxon Valdez oil spill. Environmental and Resource Economics 25, 257-286. ¹³⁷ S. Colt. The Economic Importance of Healthy Alaska Ecosystems. Institute of Social and Economic Research, University of Alaska Anchorage. Prepared for Alaska Conservation Foundation. Jan. 2001. At 7. ¹³⁸ NRC at 253.	biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS.

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73.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	In a recent environmental impact statement from the Bureau of Ocean Energy Management published in August 2017, the agency explained that the social cost of carbon was “a useful measure” to apply to a NEPA analysis of an action anticipated to have a difference in greenhouse gas emissions compared to the no-action baseline of about 25 million metric tons over a 5-year period, 80 or about 5 million metric tons per year. BLM's estimates of emissions from this program are comparable to or exceed the emissions from other projects and cases where monetization of emissions has been found useful or legally required. The downstream emissions alone clearly warrant monetization. 80 BOEM, Liberty Development and Production Plan Draft EIS at 3-129, 4,50 (2017) (89,940,000 minus 64,570,000 is about 25 million).	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. BLM has reviewed this comment and determined that the social cost of carbon is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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74.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	BLM faults the social cost of carbon for failing to include "all damages or benefits from carbon emissions."⁸⁷ Alleged benefits of carbon emissions, such as from increased fertilization, are in fact already included in the IWG's estimates and are probably even overstated in those estimates. Many of the assumptions about climate benefits built into the integrated assessment models used by the IWG are now outdated; for example, recent work demonstrates that the benefits to agriculture from climate change assumed by the developers of FUND are, in fact, far lower.⁸⁸ Other research has also shown that the predicted amenity benefits from climate change, like agricultural benefits, are also highly controversial.⁸⁹ 87 DEIS at F-3. 88 F.C. Moore et al., New science of climate change impacts on agriculture implies higher social cost of carbon, 8 Nature Communications 1607 (2017). 89 Howard, Omitted Damages, supra note 10; W.M. Hannemann, What Is the Economic Cost of Climate Change? (2008); D. Maddison & K. Rehdanz, The impact of climate on life satisfaction, 70 Ecological Economics 2437-2445 (2011); K. Rehdanz & D. Maddison, Climate and happiness, 52 Ecological Economics 111-125 (2005). 90 Howard and Sylvan (2015) and Pindyck (2016) find that that the general consensus is that damages are much higher than IAMs currently show, and as a consequence, so are their corresponding SCC estimates.	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. BLM has reviewed this comment and determined that the social cost of carbon is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.

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75.	Jason	Schwartz	Institute for Policy Integrity	94627	26	Economy	In 2016, the IWG published updated central estimates for the social cost of greenhouse gases: \$50 per ton of carbon dioxide, \$1440 per ton of methane, and \$18,000 per ton of nitrous oxide (in 2017 dollars for year 2020 emissions). ⁹¹ Agencies must continue to use estimates of a similar or higher ⁹² value in their analyses and decisionmaking. 91 U.S. Interagency Working Group on the Social Cost of Greenhouse Gases, "Technical support document: Technical update of the social cost of carbon for regulatory impact analysis under executive order 12866 & Addendum: Application of the methodology to estimate the social cost of methane and the social cost of nitrous oxide" (2016), available at https://obamawhitehouse.archives.gov/omb/oir/social-cost-of-carbon . 92 See, e.g., Richard L. Revesz et al., Global Warming: Improve Economic Models of Climate Change, 508 NATURE 173 (2014) (explaining that current estimates omit key damage categories and, therefore, are very likely underestimates).	The EIS has been revised to provide a qualitative description of nonuse/passive use/existence values (nonmarket values) and other ecosystem service values associated with the Coastal Plain (see Section 3.4.10, Economy, Affected Environment). However, a primary study to quantify the nonuse values of the Coastal Plain is outside the scope of this EIS; instead, other relevant studies from the literature on nonuse values are summarized in the EIS. The Economy section focuses on evaluating potential impacts on the local, regional, and statewide economy with respect to jobs, income, and revenues. The evaluation of potential impacts on the physical environment, biological resources, and other social systems, such as cultural resources, subsistence, recreation, visual resources, and public health, are provided in other sections of the EIS. BLM has reviewed this comment and determined that the social cost of carbon is not appropriate for this programmatic level of analysis, as described in Section F2.1 in Appendix F of the EIS.
76.	Withheld	Withheld	—	96175	1	Economy	The EIS overstates the value of a barrel of oil. Clearly, a higher number makes it economically viable to drill, build the infrastructure, and mediate the significant impacts created. The EIS should use a realistic and current value of \$50 or less a barrel. The conclusions are NOT ACCURATE utilizing the higher figure. Why is this number used?	There is a lot of uncertainty regarding oil prices. Production activities are not expected until 10 years into the future. The analysis utilized publicly available oil price projections (through year 2050) provided by the Energy Information Administration.

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77.	Margi	Dashevsky	—	98093	9	Economy	There is no analysis of expected revenues, despite the projected two billion in revenue, one billion dollars to the state of Alaska and one billion dollars to the federal government being a major factor in allowing attachment of this rider to the Tax Act.	Table 3-37 (page 3-236) of the Draft EIS presents the estimated potential government revenues. These revenues could help reduce the federal deficit.
78.	Adam	Kolton	—	98142	2	Purpose and Need	We're not hearing anything from BLM about minimum lease sale bids. Clearly, you must not want to just give this stuff away. I mean, some of the lease sales we're seeing on the North Slope, \$5.00 an acre, \$25 at most. In order to hit the numbers, by our calculations, I'd be interested to see yours, you're going to have to be upwards of \$2,700 an acre minimum bid. You're going to do that? I mean, there's no analysis of that. Look, this should be this this this was a promise, to generate a certain amount of revenue. If you're not going to hit that, don't do it. There should be a minimum bid, a minimum bid, in the program.	The detailed statement of sale issued prior to each lease sale will include minimum bid information. PL 115-97 does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

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79.	Brook	Brisson	Trustees for Alaska	98270	184	Economy	The promise of cheaper, more abundant energy - and associated federal revenues - was a primary driver behind opening the Coastal Plain to oil and gas development, including its inclusion in the 2017 Tax Act. Prior to passage of the Tax Act, the Congressional Budget Office estimated that federal revenue from Coastal Plain development during 2018-2027 would be \$1.1 billion, 1986 with the same amount going to the State of Alaska. The draft EIS does not even include estimates of anticipated revenue from lease sales, 1987 and several recent Arctic lease sales have not brought in revenues to match the projections in the Tax Act. 1988 Where BLM does attempt to forecast economic benefits, it does so based on questionable or sometimes plainly faulty assumptions. For instance, despite tremendous uncertainty, BLM considers only one development scenario that relies on unjustified production assumptions, including aggressive leasing and exploration, oil and gas prices high enough to support development, 1989 and the likelihood that oil will be discovered in and recoverable from a small number of large fields. 1990 BLM's hypothetical timeline for development - a critical assumption underlying a complete and accurate economic impacts analysis - is also problematic, unrealistically short, does not consider potential delays (e.g., due to weather or litigation), inconsistently reported throughout the draft EIS, 1991 and inconsistent with the timeline developed by the Energy Information Administration, 1992 whose modelling of likely production undergirds the development scenario.	Acknowledged. The EIS considered a hypothetical development scenario that may or may not occur in the future. However, a future NEPA analysis will have to be done, once there is a specific development plan proposed by a leaseholder.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Brook	Brisson	Trustees for Alaska	98270	186	Economy	Nor are the federal royalty and tax projections included in the draft EIS complete.1994 For instance, they do not include any estimate for revenue generation in the next 10 years - providing no basis for comparison with the wildly optimistic estimates from the Congressional Budget Office (\$1.1 billion) and the White House Office of Management and Budget (\$1.8 billion) of federal revenue that would be generated between 2018 and 2027.1995	Since lease terms are undetermined at this time, lease or rental payments were not presented in the Draft EIS. As stated on page 3-231 of the Draft EIS, "direct impacts from issuing oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would include the federal government receiving bonus bids and rental payments from leasing; however, these payments cannot be quantified because there is not enough specificity at this time regarding the lease terms."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Brook	Brisson	Trustees for Alaska	98270	189	Economy	The draft EIS estimates jobs and wage income, but fails to include sufficient information about inputs it relies upon (timeline, production, and related annual costs) to support the analysis or the estimates.2000 The estimates also include unsupported assumptions related to the creation of new jobs and associated wage income contributing to economic growth. New jobs would only be created if the workers who obtain them would otherwise be unemployed. These realities are not addressed in the draft EIS, rendering its job and wage income estimates uninformative. The draft EIS recognizes that the significant ecosystem service values and other socioeconomic benefits (including wilderness, recreation, and subsistence) of the Coastal Plain would be harmed by oil and gas development, but makes no attempt to quantify or specifically identify those impacts.2001 Under NEPA, BLM is not permitted to quantify purported economic benefits associated with an oil and gas development program without also quantifying the economic costs of that development to nonmarket values.2002 The draft EIS fails to explain why it did not quantify the numerous and significant nonmarket values of the Coastal Plain, and the market effects that ecological damages would have on the local economy, especially recreation and tourism. Performing such a quantitative analysis is entirely feasible and necessary to inform the analysis in the EIS. Indeed, a team from Hendrix College has a study in peer review that quantifies ecosystem services values associated with the Coastal Plain.2003 2003 See January 30, 2019 Comments on Leasing DEIS submitted by Moran, McClung, and Young.	The assumptions used in quantifying the potential economic impacts of post-lease development activities are presented in Section B.6, Method and Assumptions for Hypothetical Development Scenario Projections of the EIS, and also on page 3-233 of the Economy section. Additional detail regarding the assumptions also has been added to the EIS. The estimated jobs reflect new jobs that would be required for the exploration, development, and production activities described in Section B.7 of the Draft EIS. Furthermore, most exploration and development (construction) jobs, and ongoing CAPEX jobs on the North Slope are only in the winter season when a large number of summertime construction workers are unemployed in Alaska and available for jobs on the North Slope.

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82.	Brook	Brisson	Trustees for Alaska	98270	190	Economy	Finally - and compounding the failure to identify, quantify, or analyze the economic costs of an oil and gas development program on the wilderness, wildlife, subsistence, recreation, water, and other values of the Coastal Plain - the draft EIS's description of the regional economy is incomplete and misleading.2004 Although the draft EIS acknowledges that less than 0.5% of oil and gas jobs are held by residents of the North Slope Borough,2005 it focuses only on the oil and gas industry rather than describing the regional economy. Absent complete and quantitative information on all elements of regional asserts - including subsistence uses, tourism dollars from Coastal Plain recreation, the value of ecosystem services, etc. - BLM's baseline for analysis remains fundamentally flawed and inaccurate.	The potential impacts on subsistence and recreational resources are addressed in Sections 3.4.3 and 3.4.6, respectively, of the Draft EIS. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analyses. At that time, the BLM will determine which baseline studies may be necessary.

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83.	Brook	Brisson	Trustees for Alaska	98270	225	Economy	The draft EIS asserts, mistakenly and without support, that "Development in the Coastal Plain is anticipated to contribute to the nation's economy through . . . increase in energy security (or reduced reliance on imported petroleum products)."2080 First, there is no reason to expect that all or even most of the oil produced from the Coastal Plain - if any eventually is produced - will stay in the United States. In late 2015, after intensive lobbying from oil companies, restrictions on export of crude oil was made illegal in the Consolidated Appropriations Act of 2016.2081 Since then, export of domestically produced crude oil has exploded, reaching more than a million barrels a day in 20172082 and three million barrels a day late last year.2083 Assuming this trend continues, by the time any oil could reasonably be produced from the Coastal Plain, it would be in excess of U.S. demand and likely simply exported into the global market for foreign consumption. The revised draft EIS must recognize and analyze this.	Oil is a global commodity and is traded internationally. Oil that would be produced from the Coastal Plain may or may not be sold in domestic markets; however, any oil produced domestically would reduce the need for the U.S. to import oil from outside sources; hence, it would increase the country's energy security. If domestic supply exceeds U.S. demand for petroleum resources in the future, it is still an economic gain for the country if domestic oil is exported.

S.3.12 Editorial

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Malkolm	Boothroyd	—	54092	4	Editorial Comments (grammar and formatting updates)	misspelling of species names: "red-neck phalarope," "gyrfaon" and "peregrine faon	The text has been revised accordingly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	73206	3	Editorial Comments (grammar and formatting updates)	Further, the EIS incorporates by reference, many other major studies and reports, without sufficient summary to describe the topics at hand. The EIS documents from the Greater Mooses Tooth energy development in the National Petroleum Reserve-Alaska, is a case in point and is heavily referenced as to describing the existing environment and potential impacts in Chapter 3. However, that series of documents is not included in the list of documents that readers can download on this EIS website. And the references to those documents are not specific to volume, chapter section or page, but are generic, so a reader must search through those documents to learn of the points to be made and information that relates to this Leasing EIS. It is the most awkward process for review of an EIS that I have seen in my 39 years as an environmental scientist.	Section numbers have been provided when discussions in other major studies and reports are incorporated by reference.
3.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	40	Editorial Comments (grammar and formatting updates)	3-122 The link provided for the FWS stock assessment report ("SAR") is not working. Recommend providing updated link to the most recent SAR.	The text has been revised accordingly.
4.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	42	Editorial Comments (grammar and formatting updates)	3-128 It is not clear what the DEIS means by "near" oilfield infrastructure. This should be defined in the FEIS.	The text has been revised accordingly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Janet	Jorgenson	—	81671	6	Editorial Comments (grammar and formatting updates)	Appendix F needs more explanation of what it means and how it was used to evaluate the alternatives. Sections of this appendix table were evidently written by many different people and the way they treated the 'impact indicator' column is not at all standardized. For vegetation, the indicator column repeatedly says 'no indicator available to assess possible plant community changes'. That is not consistent with how the same problem of quantifying habitat changes is dealt with for other items, such as bird or caribou habitat. Compare the wording for vegetation with that for bird habitat. It is the same issue with regards to the difficulty of quantifying habitat changes, but they use completely different wording. For example "habitat affected (qualitative)", "describe extent of effect in qualitative terms", "potential impacts on bird populations". And then it's treated differently again for caribou habitat, such as "qualitative assessment". These should be rewritten and standardized.	The organization and approach to analysis in Chapter 3 have been standardized across all resources.
6.	Janet	Jorgenson	—	81671	13	Editorial Comments (grammar and formatting updates)	In the first table in the Alternatives chapter, it doesn't define acronyms TL, NSO, ROP etc. The public can't keep going back to acronym page. Should define each acronym at least the first time it is use in each chapter. For example, I did a word search for 'TL' and found it defined in the Executive Summary only, not anywhere in the main document and not before it is used in the descriptions of alternatives and the table of stipulations and ROPs. The table of stipulations and ROPs would be easier to relate to impacts on the ground if the information of hypothetical alternative scenarios was available in the same chapter. For example, the projected number of CPUs.	A footnote has been added instructing readers to view the glossary for defined terms.
7.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	11	Editorial Comments (grammar and formatting updates)	Several bird names are misspelled, such as 'red-neck phalarope,' 'Peregrine Faon' and 'Gyrfaon.	The text has been revised accordingly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	—	—	Alaska Department of Natural Resources	94102	27	Editorial Comments (grammar and formatting updates)	3 Chapter 2, Section 2.2, Page 2-1 Surface use designations unclear Section 2.2 offers a description of the alternatives by providing a table 2-1 that highlights the key differences among the alternatives. Unfortunately the table includes BLM specific abbreviations that are not known to the general public, which forces the reader to search elsewhere in the document to determine the meaning of acronyms or abbreviations. The information would be clearer to the reader if No Surface Occupancy (NSO), Controlled Surface Use (CSU, and Timing Limitations (TL) were spelled out and describe in an introductory paragraph to the table.	A footnote has been added instructing readers to view the glossary for defined terms.
9.	Harry K.	Brower Jr.	North Slope Borough	95612	61	Editorial Comments (grammar and formatting updates)	3.3.3 3-93 As stated above please include 200 meters in parenthesis after 656 foot.	The text has been revised as requested.
10.	Harry K.	Brower Jr.	North Slope Borough	95612	66	Editorial Comments (grammar and formatting updates)	3.3.5 3-125 The correct spelling is Inuvialuit.	The text has been revised accordingly.

S.3.13 Environmental Justice

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	59376	17	Environmental Justice	The environmental justice section difficult to follow because it deconstructs the topic and meshes the discussion with other requirements (CEQ Guidance on environmental justice and Government-to-Government consultation). It is not focused on the requirements of the E.O. specifically. Based on their outcry, are the Gwich'in a minority and low income group that is being disproportionately affected by the proposed action? Consider whether: their customs and traditions are at a risk of loss; they would be affected to a different extent than other Alaska Natives; Gwich'in would be able to continue living off of the land or would they be placed into financial hardship by greater reliance on store bought food.	The approach for environmental justice analysis is described in Appendix F, Section F.4.21. Two Gwich'in communities (Arctic Village and Venetie) are specifically considered in the environmental justice section based on their identified use of relevant subsistence resources in Section 3.4.3.
2.	Withheld	Withheld	—	59376	18	Environmental Justice	What is the significance of the assumed 19% reliance of Arctic Village on subsistence resources if it is lost? A BOEM report indicates that in 1986, Chevron/BP and Kaktovik Iñupiat Corporation drilled a well on ASRC lands within the 1002 Area of ANWR and this information is still confidential status with some exclusive rights held by Chevron/BP.- 13 Given this, proximity to the coastal plain may not necessarily be a measure of who is most impacted from an environmental justice perspective if the community of Kaktovik has alternative means to support themselves. The E.O. explains BLM could seek a presidential exemption from compliance	Relative reliance on subsistence resources and the impacts of potential loss of access on those resources is analyzed in Section 3.4.3. The issue of differential distribution of beneficial and adverse impacts among different communities is discussed in the environmental justice analysis.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Martha	Raynolds	—	67039	12	Environmental Justice	The consultation with the towns of Arctic Village, Venetie and Old Crow was very minimal, whereas they are acknowledged as the poorest in terms of cash income, and will bear the most burden from oil & gas activities. Their voices should be given more weight given their disadvantages. It is expensive and time consuming to attend hearings and submit comments when you live a remote, subsistence lifestyle.	Public meetings were held in Arctic Village and Venetie, among others, based on their identified use of relevant subsistence resources in Section 3.4.3. Government-to-government consultation has been ongoing in those communities.
4.	Withheld	Withheld	—	68965	86	Environmental Justice	59. Chapter 3; section 3.4.5, pages 3-193 to 3-202. Environmental Justice. Throughout the comparison of alternatives in this section, the magnitude of effects is often expressed as less than alternative B. Whenever possible, please elaborate on such relative statements by further describing the degree to which mitigation measures move the program on the overall spectrum of severity of effects; for example whether mitigation measures reduce the level of effect from adverse to negligible, or from severely adverse to less adverse. Understanding where on the spectrum of effects each alternative lays will provide useful information to decision makers and other interested parties.	Detailed discussions of the magnitude of effects and the role of specific mitigation measures in reducing those effects for subsistence uses and resources, sociocultural systems, economy, and public health are presented in Sections 3.4.3, 3.4.4, 3.4.10, and 3.4.11, respectively. They are not recapitulated in the environmental justice section beyond brief summaries.
5.	Withheld	Withheld	—	68965	88	Environmental Justice	61. Chapter 3; section 3.4.5, pages 3-201 to 3-202. Environmental Justice. Please see my general comment (3) above regarding cumulative effects, and my next specific comment regarding recreation. I believe your analysis of Environmental Justice impacts would benefit from consideration of a potentially large decrease in recreational visitation and associated economic activity.	Impacts noted in the recreation analysis (Section 3.4.6) were not identified as being of environmental justice concern.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	—	70042	1	Environmental Justice	to do and EJ anlysus of indigenous people and their populations and compare it to some similar economic status of other populations where there is significant development and the landscape is 100% different and people are not in subsistence living situations is a complete injustice and wrong and inaccurate	Comparisons of minority population and low-income population measures of local communities and the larger general population of the state were made consistent with CEQ guidance on determining whether impacts may be of environmental justice concern. Impacts on subsistence and sociocultural systems were considered in detail in Sections 3.4.3 and 3.4.5, respectively, and acknowledge the unique attributes of potentially affected indigenous communities.
7.	Withheld	Withheld	—	70934	40	Environmental Justice	Page 3-198 in regard to additional hyperbole about employment for Kaktovik residents, Can BLM show statistics for increased employment in Nuiqsut? If not, why would anyone imagine it would happen in Kaktovik? Is this assumption about employment based on the larger percentage of residents in Kaktovik who are not ASRC or KIC shareholders because of Canadian descent?	As noted in Section 3.4.5, in 2016 NSB residents held less than 0.5 percent of all oil and gas jobs based on the North Slope. The statement is made that training programs are expected to create more opportunities for employment for Kaktovik residents due to their proximity to the proposed development, consistent with the economic analysis in Section 3.4.10; however, the analysis does not speculate on how many jobs may ultimately be filled by local residents.
8.	Withheld	Withheld	—	70934	41	Environmental Justice	Page 3-198 paragraph #2 in regard to bed tax, This is a poor assumption as the corporation hotel is already full for much of the year and there is a serious housing shortage.	As acknowledged Section 3.4.5, the change in the level of hotel occupancy is difficult to quantify at this point. This is because the timing and amount of local consultations and mobilization are uncertain and may vary.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Jill	Nogi	Environmental Protection Agency	71634	36	Environmental Justice	The DEIS identifies disproportionate adverse subsistence, sociocultural, and public health impacts to multiple environmental justice communities, including Kaktovik, Nuiqsut, Arctic Village, and Venetie. In accordance with Council on Environmental Quality guidance on how to address Environmental Justice in the environmental review process 7, we recommend the following additional information be included in the EIS, in order to fully consider and address potential environmental justice impacts: * Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts; * Disclose the results of meaningful involvement efforts, such as community identified impacts; * Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the BLM's decision-making process; * Propose mitigation for unavoidable impacts that are likely to occur; and * Include a summary conclusion, sometimes referred to as an 'environmental justice determination' that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.	Efforts to meaningfully involve affected communities are summarized in the Direct and Indirect Impacts discussion of the environmental justice analysis; they include public meetings, coordinating with federally recognized tribes, government-to-government meetings, ANCSA corporation consultations, and having local and tribal governments participate as cooperating agencies. The involvement of these communities has resulted in mitigation measures that mitigate impacts on the communities and resources they rely on. Mitigation measures for subsistence, sociocultural systems, economy, and public health areas are described in each of those sections of the analysis. As those are the identified mechanisms for potential environmental justice impacts, no separate environmental justice mitigation measures are proposed. The summary conclusion or "environmental justice determination" will be made in the Record of Decision.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Matthew	Rexford	Native Village of Kaktovik	74308	16	Environmental Justice	Pg. 3-198 - 199 The DEIS states "...however, with other oil and gas development in the NSB, income and employment have been found to be associated with an increased prevalence of social pathologies, including substance abuse, assault, domestic violence, and unintentional and intentional injuries." NVK demands that this is either referenced or deleted. This information is patronizing and condescending and ignores the history of cultural trauma at the root of these issues. Furthermore, substance abuse is increasing state- and nation-wide, and is not just a North Slope specific problem.	The referenced wording has been modified in response to comments.
11.	Matthew	Rexford	Native Village of Kaktovik	74308	18	Environmental Justice	Pg. 3-202 The DEIS states "Future development offshore in the Beaufort Sea would likely increase the risk of accident and injury by changing harvest patterns and requiring more time on the water to harvest animals." NVK is not aware of any offshore development plans in the Beaufort and is opposed to offshore development of oil and gas due to our strong cultural ties to subsistence whaling. An EIS for offshore leasing in the Beaufort Sea is still in early stages of development the DEIS should not assume that a lease sale will occur. This is a hypothetical statement and should be struck from the document	The BLM has changed the EIS text to "Future development offshore in the Beaufort Sea could likely increase the risk of accident and injury by changing harvest patterns and requiring more time on the water to harvest animals. This shows potential impacts, but that they are not certain to occur."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Jason	Paulsen	—	74312	3	Environmental Justice	the EIS fails to address the likely and predictable impacts this changing climate, coupled with development of the Coastal Plain, will have upon the culture of the Gwich'in people, other native peoples in Canada as it relates to their food security as a component of environmental justice for which NEPA is intended to address.	Potential climate change impacts on subsistence are discussed in Section 3.4.3; potential impacts on sociocultural systems are discussed in Section 3.4.4. While both the subsistence and sociocultural sections consider potential impacts on Canadian communities, the environmental justice analysis, which is based on Executive Order 12898, does not. That EO calls for "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects...on minority populations and low income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands."
13.	Allen E.	Smith	—	74324	16	Environmental Justice	BLM failed to recognize that the human rights of the indigenous Native Athabaskan Gwich'in Indians living in villages south and east of the Brooks Range in Alaska and Canada would be compromised and their reliance on the Porcupine Caribou Herd for their cultural and traditional subsistence way of life would be destroyed by oil and gas development in the Arctic Refuge coastal plain.	Two Gwich'in communities (Arctic Village and Venetie) are specifically considered in the environmental justice section based on their identified use of relevant subsistence resources in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. Per an earlier comment response, the environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Dr. Julianne Lutz	Warren	—	74344	1	Environmental Justice	I call on BLM to translate all DEIS documents into AK Native languages so that everyone most affected by what happens to the Refuge can participate. That is a democratic mandate.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2, Alternatives; Chapter 3, Cultural Resources, Subsistence Uses, and Resources; and Appendix E, ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
15.	Chandra	Turner	Inuvialuit Game Council	75904	7	Environmental Justice	The inadequate and narrow lens of the four study communities continues in the Environmental Justice section (3.4.5) of the DEIS. As with the previous sections, the DEIS focuses on the four study communities ⁸ without explaining why Canadian communities that are highly dependent on the PCH are excluded from further analysis. As acknowledged in Section 3.4.3 (at 3-178 and cited above), this section is perhaps where one would expect to find the greatest consideration of Canadian communities, as they will experience no direct benefits of the proposed activities, only the negative impacts. This section of the report contains no reference to or discussion of the impact of post-leasing activities for environmental justice considerations with respect to Canadian Indigenous communities.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Chandra	Turner	Inuvialuit Game Council	75904	52	Environmental Justice	he DEIS fails to assess in any detailed way the impact of post-leasing activities on the rights of Canadian Indigenous communities as Indigenous peoples under international law and as minorities under international law.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.
17.	Chandra	Turner	Inuvialuit Game Council	75904	53	Environmental Justice	In sum, and as we stated in our submission on scoping, the BLM is bound to include within the scope of the EIA the effect of activities in the 1002 lands which may have implications for shared migratory species, the shared ecosystem of the North Slope and interrelated social, cultural, and economic effects on Indigenous communities in Canada that depend on these resources and the shared ecosystem. We have reviewed the DEIS with this principle in mind. While it is true that the DEIS makes occasional references to the potential impact of oil and gas activities on migratory resources and thus on Indigenous communities in Canada, the DEIS does not afford these interests equal study, analysis and respect when compared with the interests of Indigenous communities in Alaska.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	57	Environmental Justice	The DEIS fails to adequately analyze environmental justice implications of oil and gas development, and how Arctic Village and Venetie will be specifically impacted. The DEIS trivializes the impacts of climate change on Gwich'in communities: "[s]imilar concerns also apply to those who are not on the North Slope but nevertheless depend on its subsistence resources, such as the Gwich'in communities of Arctic Village and Venetie." (DEIS, at 3-195). These are not just "concerns," but real issues. Climate change is already affecting communities of the boreal forest. ⁴²	Arctic Village and Venetie are specifically considered in the environmental justice section based on their identified use of relevant subsistence resources in Section 3.4.3. Potential climate change impacts on subsistence are discussed in Section 3.4.3; potential impacts on sociocultural systems are discussed in Section 3.4.4. The wording "concerns also apply to" has been replaced by "issues are also faced by."
19.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	13	Environmental Justice	7. Pg. 3-198-199 "...however, with our oil and gas development in the NSB, income and employment have been found to be associated with an increased prevalence of social pathologies, including substance abuse, assault, domestic violence, and unintentional and intentional injuries." VOICE hopes that the BLM will work to qualify this statement with referenced data connecting these issues directly to oil and gas development or remove it from the DEIS entirely. The statement as written is condescending and ignorant of the cultural and historical trauma at the core of these social pathologies that people on the North Slope and in rural communities across Alaska have experienced as a result of harmful treatment at the hands of missionaries, the State of Alaska, the military, and the federal government. Further, Kaktovik has been operating in dual cash and subsistence economy for decades and our traditional Iñupiat economic system has been changing since early contact with Western Civilization in commercial whaling times. The logic of the BLM in this passage diminishes the right to self-determination that the Iñupiat have been working towards for generations.	The referenced wording has been modified in response to comments.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	14	Environmental Justice	8. Pg. 3-199 "Because of the particular spiritual and cultural importance of the coastal plain and the PCH calving grounds to the people of Arctic Village and Venetie, any disruption to that herd or contamination or degradation of calving grounds in the program area would have potential sociocultural impacts on the Gwich'in people, in terms of their belief system and cultural identity." This statement seems to suggest that the Gwich'in people of Arctic Village and Venetie have more of a spiritual and cultural claim to the Coastal Plain than the Kaktovikmiut. VOICE hopes that the BLM will realize the cultural insensitivity of such statements, of which there are many in the EIS, and work to correct it for the Final EIS. As has been stated ad nauseam elsewhere, the Kaktovikmiut are the actual residents of the Program Area and, as stated in the DEIS, can trace their roots to this area back 14,000 years. You cannot rewrite this history and the primary importance of this land to the people of Kaktovik; it is insulting, irresponsible, and colonialist. The EIS must be based on subjective facts, not objectivity.	This referenced statement has been deleted.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	Withheld	Withheld	—	86056	1	Environmental Justice	The Environmental Justice Section which analyzes Public Health at page 3-198 suggests that if accidental discharge were to occur, the exposure “would be likely short term and intermittent and unlikely to lead to significant health effects.” This EIS is assuming that there would be certain protocols to keep the exposure short term however, there is no analysis of any long-term exposure effects to public health. Unless specific data or safety measures were analyzed when coming to the conclusion that exposure will be short term, long term exposure analysis to public health should also be analyzed. If only short term exposure is to be analyzed, the data, safety measures, and controls that were analyzed when coming to this conclusion should be included to give the reader a holistic understand of how the EIS came to the conclusion that exposure levels will be short term.	The quoted text in the environmental justice section is a summary of the findings of the public health analysis (Section 3.4.11). That analysis, in turn, relies in part on the water quality analysis (Section 3.2.10). Those two sections provided a detailed analysis of how the public health conclusion was reached, which is not recapitulated in the environmental justice section.
22.	Caitlin	Lenahan	—	87651	2	Environmental Justice	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA (Alaska National Interest Lands Conservation Act) which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, they then find that Gwich'in subsistence use will not be affected. This ignores the traditional knowledge and human rights of the Gwich'in.	Based on the Draft EIS's analysis of impacts on caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts on PCH caribou abundance may be affected due to minor displacement of maternal caribou; however, due to the mitigating effects of the lease stipulations and ROPs, large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use are unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts on caribou.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	50	Environmental Justice	The environmental justice analysis contains absolutely no discussion of how BLM intends to mitigate this finding, contrary to CEQ guidance. The only stipulations and ROPs mentioned are those relevant to other resource categories such as subsistence and public health. BLM wholly failed to consider specific mitigation measures to address disproportionate, adverse impacts to environmental justice in Gwich'in communities.	The environmental justice finding has been corrected to make it consistent with the standard in EO 12898 and the ANILCA 810 findings. EO 12898 requires agencies to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The EIS subsistence analysis and ANILCA 810 evaluation indicate that adverse subsistence impacts on Arctic Village, Venetie, and Nuiqsut would not be high. Accordingly, a disproportionate effects determination under EO 12898 is not warranted; thus, environmental justice-specific mitigation measures are not required. Mitigation measures for subsistence, sociocultural systems, economy, and public health areas are described in each of those sections of the analysis. As those are the identified mechanisms for potential environmental justice impacts, no separate environmental justice mitigation measures are proposed.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	51	Environmental Justice	All of the Gwich'in communities dependent upon the Coastal Plain's resources - in Alaska and Canada - meet the criteria as for being minority or low-income populations, as these are primarily communities of indigenous people with a subsistence-cash economy. As such, all of these communities should have been considered in BLM's environmental justice analysis.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.
25.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	52	Environmental Justice	Critically, we note that BLM should have also considered impacts to cultural resources, visual resources, acoustics and soundscapes, air quality, fish, birds, and caribou in terms of importance to environmental justice. These additional resources and issues have the potential to significantly impact Gwich'in communities dependent upon the Arctic Refuge.	Air quality was analyzed as a public health issue, with the summary findings of that analysis incorporated into the environmental justice analysis. Fish, birds, and caribou were analyzed as subsistence resources, with the summary findings of that analysis incorporated into the environmental justice analysis. Cultural resources, visual resources, and acoustics and soundscapes were all analyzed in the EIS, but they were not summarized separately in the environmental justice analysis. Visual resources and acoustics were taken into account in the subsistence analysis with respect to potential changes in subsistence resource behavior.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	53	Environmental Justice	BLM acknowledges "[c]ommunities that are most likely to experience negative sociocultural impacts would be those that experience impacts on subsistence, while not having increased income or employment opportunities, such as Arctic Village and Venetie; therefore, the action alternatives would constitute a disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie." ¹¹⁹ It is unclear whether this statement is tied only to cumulative impacts or to the direct and indirect impacts of oil and gas leasing and development on the Coastal Plain. BLM should clarify this.	This portion of the EIS addresses cumulative impacts of all oil and gas activity in the area of potential cumulative effects, not just those activities that may occur in the Coastal Plain. The text has been corrected to make it consistent with the standard in EO 12898 and the ANILCA 810 findings. EO 12898 requires agencies to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The EIS subsistence analysis and ANILCA 810 evaluation indicate that adverse subsistence impacts on Arctic Village, Venetie, and Nuiqsut would not be high. Accordingly, a disproportionate effects determination under EO 12898 is not warranted.
27.	Edward	Rexford	Native Village of Kaktovik	95607	20	Environmental Justice	Pg. 3-198 - 199 The DEIS states "...however, with other oil and gas development in the NSB, income and employment have been found to be associated with an increased prevalence of social pathologies, including substance abuse, assault, domestic violence, and unintentional and intentional injuries." NVK demands that this is either referenced or deleted. This information is patronizing and condescending and ignores the history of cultural trauma at the root of these issues. Furthermore, substance abuse is increasing state- and nation-wide, and is not just a North Slope specific problem.	The referenced wording has been modified in response to comments.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Brook	Brisson	Trustees for Alaska	98270	90	Environmental Justice	The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. Though the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain. ¹⁷⁴⁵ The draft EIS recognizes that many other communities, such as Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole. ¹⁷⁴⁶ BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users." ¹⁷⁴⁷ All of these communities - in Alaska and Canada - meet the criteria as for being minority or low-income populations, as these are primarily communities of indigenous people with a subsistence-cash economy. As such, all of these communities should have been properly considered in BLM's environmental justice analysis.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO.

S. Public Comments and BLM Responses (Environmental Justice)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Brook	Brisson	Trustees for Alaska	98270	91	Environmental Justice	BLM recognizes that "environmental justice impacts related to potential adverse impacts on subsistence resources extend well beyond the immediate program area, and they encompass the social and cultural value of subsistence resources (and their uses), as described in ANILCA, as well as the value of direct reliance on these resources for physical sustenance."1748 Despite this, BLM arbitrarily limits its environmental justice analysis to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.1749 BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly impact minority populations and low-income populations, as required by relevant executive orders and BLM's own guidance.	The four communities referenced in the comment were included in the environmental justice analysis based on their proximity to the Coastal Plain and/or identified substantial use of relevant Coastal Plain subsistence resources, as discussed in Section 3.4.3. Other Gwich'in community impacts are discussed in the subsistence and sociocultural analyses (Sections 3.4.3 and 3.4.4, respectively), including Canadian communities. The environmental justice analysis, which is based on EO 12898, focuses on populations within the United States, consistent with the language of that EO. The approach for environmental justice analysis is clearly described in Appendix F, Section F.4.21. The analysis was completed in accordance with Executive Order 12898 and relevant guidance.
30.	Brook	Brisson	Trustees for Alaska	98270	92	Environmental Justice	Regarding BLM's analysis of the environmental consequences, BLM arbitrarily and improperly limits the scope of its environmental justice analysis in the same way it improperly limited the scope of its NEPA and ANILCA 810 analysis. BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.1750 BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to minority and low-income populations that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain.	Issuance of oil and gas leases would have no direct impacts on the environment because by itself a lease does not authorize any on-the-ground oil and gas activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to further environmental review and reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease. The impacts of such future exploration and development activities that may occur because of the issuance of leases are considered potential indirect impacts of leasing. Therefore, the analysis focuses on potential direct, indirect, and cumulative impacts from on-the-ground post-lease activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Brook	Brisson	Trustees for Alaska	98270	93	Environmental Justice	BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and air quality impacts that could deter fish and wildlife from important habitat areas and directly impact nearby communities. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines.
32.	Brook	Brisson	Trustees for Alaska	98270	94	Environmental Justice	BLM further downplays the potential environmental justice impacts from oil and gas leasing by relying on its own flawed analysis throughout the EIS to justify its findings. BLM correctly notes that CEQ guidance directs the agency to consider any multiple or cumulative effects on human health and the environment, even if certain effects are not in the control or subject to the discretion of the agency. 1751 BLM further notes that impacts to economy, subsistence, sociocultural, and public health and safety are largely, if not exclusively, also of importance to environmental justice.1752 BLM then briefly summarizes its conclusions from these sections of its DEIS. As described in detail above, BLM failed to adequately analyze impacts to subsistence,1753 sociocultural systems,1754 the economy,1755 and public health.1756 These flawed analyses result in BLM's inadequate discussion of environmental justice impacts.	The analyses of impacts on subsistence, sociocultural systems, economy, and public health and safety, identified as potential mechanisms of impacts of environmental justice concern for communities, are robust and comprehensive. They are in accordance with EO 12898 and CEQ regulations. The approach to environmental justice is presented in Appendix F, Section F.4.21.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Brook	Brisson	Trustees for Alaska	98270	95	Environmental Justice	Critically, we note that BLM should have also considered impacts to cultural resources, visual resources, acoustics and soundscapes, air quality, fish, and caribou in terms of importance to environmental justice. These additional resources and issues have the potential to significantly impact minority and low-income populations dependent upon the Arctic Refuge. Thus, BLM failed to consider many of the factors that determine environmental justice impacts.	Air quality was analyzed as a public health issue, with the summary findings of that analysis incorporated into the environmental justice analysis. Fish, birds, and caribou were analyzed as subsistence resources, with the summary findings of that analysis incorporated into the environmental justice analysis. Cultural resources, visual resources, and acoustics and soundscapes were all analyzed in the EIS, but they were not summarized separately in the environmental justice analysis. Visual resources and acoustics were taken into account in the subsistence analysis with respect to potential changes in subsistence resource behavior.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Brook	Brisson	Trustees for Alaska	98270	96	Environmental Justice	In the cumulative effects portion of its environmental justice discussion, BLM recognizes that on the North Slope "decades of oil exploration and development conducted by the federal government and industry...[have] directly affected habitat use and behavior of subsistence species and resulted in additive impacts on subsistence resources, harvest patterns, and users. These effects have altered livelihoods and ways of life and account for some of the social disruptions seen in villages today."1757 BLM does not, however, fully analyze how such similar direct and indirect impacts may affect communities on the Coastal Plain or that rely on Coastal Plain resources, which has been historically protected from oil and gas development. BLM fails to take a hard look at the ways in which specific minority and low-income communities would be similarly impacted by oil and gas leasing development in the Arctic Refuge, merely relying on conclusory statements which cite to other findings in its EIS.	The analyses of impacts on subsistence, sociocultural systems, economy, and public health and safety, identified as potential mechanisms of impacts of environmental justice concern for communities, are robust and comprehensive. They are in accordance with EO 12898 and CEQ regulations. The approach to environmental justice is presented in Appendix F, Section F.4.21.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Brook	Brisson	Trustees for Alaska	98270	97	Environmental Justice	BLM acknowledges “[c]ommunities that are most likely to experience negative sociocultural impacts would be those that experience impacts on subsistence, while not having increased income or employment opportunities, such as Arctic Village and Venetie; therefore, the action alternatives would constitute a disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie.” ¹⁷⁵⁸ It is unclear whether this statement is tied only to cumulative impacts or to the direct and indirect impacts of oil and gas leasing and development on the Coastal Plain. BLM should clarify this. BLM must also explain why this finding does not include all communities whose subsistence way of life is closely tied to the resources of the Coastal Plain, and why no similar finding was made cumulatively for Nuiqsut, where environmental justice impacts are already occurring. ¹⁷⁵⁹ Additionally, BLM must explain how this conclusion is consistent with its ANILCA 810 findings, which do not find a significant restriction on subsistence uses for Arctic Village or Venetie. ¹⁷⁶⁰	This portion of the EIS addresses cumulative impacts of all oil and gas activity in the area of potential cumulative effects, not just those activities that may occur in the Coastal Plain. The text has been corrected to make it consistent with the standard in EO 12898 and the ANILCA 810 findings. EO 12898 requires agencies to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The EIS subsistence analysis and ANILCA 810 evaluation indicate that adverse subsistence impacts on Arctic Village, Venetie, and Nuiqsut would not be high. Accordingly, a disproportionate effects determination under EO 12898 is not warranted.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Brook	Brisson	Trustees for Alaska	98270	98	Environmental Justice	Despite this finding, BLM discusses no mitigation measures whatsoever to address such a disproportionate, adverse impacts. This is contrary to CEQ guidance, which states that "agencies should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe and should carefully consider community views in developing and implementing mitigation strategies." The environmental justice analysis contains absolutely no discussion of how BLM intends to mitigate this finding, contrary to CEQ guidance. The only stipulations and ROPs mentioned are those relevant to other resource categories such as subsistence and public health. BLM wholly failed to consider specific mitigation measures to address disproportionate, adverse impacts to environmental justice communities.	The environmental justice finding has been corrected to make it consistent with the standard in EO 12898 and the ANILCA 810 findings. EO 12898 requires agencies to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The EIS subsistence analysis and ANILCA 810 evaluation indicate that adverse subsistence impacts on Arctic Village, Venetie, and Nuiqsut would not be high. Accordingly, a disproportionate effects determination under EO 12898 is not warranted; thus, environmental justice-specific mitigation measures are not required. Mitigation measures for subsistence, sociocultural systems, economy, and public health areas are described in each of those sections of the analysis. As those are the identified mechanisms for potential environmental justice impacts, no separate environmental justice mitigation measures are proposed.

S.3.14 Fish and Aquatic Species

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Dennis	Higgs	—	37688	8	Fish and Aquatic Species	Table E-2 indicates minimal impact on fish in terms of disturbance, displacement or injury but without a more robust analysis of the likely noise impacts from construction and exploration, this conclusion cannot be supported.	Lease stipulation regulations and ROPs (Chapter 2, Table 2-2) would help reduce these impacts. Furthermore, during the post-sale project-specific permitting phase, additional analyses will be required in the context of the project-specific footprints. Recent EISs (Nanashuk 2018, GMT2 2018), however, have come to similar conclusions. The BLM created a separate appendix (Appendix P) for analysis of EFH following the comment period, which looked in more detail at impacts such as noise in freshwater and marine waters. Morris and Winters (2005) determined that vibroseis is generally a safe seismic technique for fish when certain guidelines are followed. We added this to the discussion of seismic impacts under Disturbance or Displacement: Noise and Human Activity.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	Denver Audubon	57090	9	Fish and Aquatic Species	The data for aquatic invertebrates in the program area are limited, but it is well understood that invertebrates provide the bulk of food resources for both fish and bird communities (EIS, 3-78). This suggests that more studies of aquatic invertebrates are badly needed and should certainly be conducted before any oil and gas development is permitted on the Coastal Plain to that impacts to wildlife can be better understood and avoided.	Specific studies on aquatic invertebrates for the program area are lacking. The BLM believes most of the concern for impacts on aquatic invertebrates would relate to causing ice to ground where it normally doesn't. At stream and river crossings, this shouldn't be an issue. This is because those areas have to be grounded before using them, and most of the rivers and streams will freeze/cease flow anyway. Invertebrates located in those areas have adapted to freezing conditions, or otherwise would not persist there. The same is true with lakes. There are complaints that causing a lake's littoral zone to freeze a little further than it naturally would during a given winter (via ice and water removal) is a major concern; but, invertebrates there are also adapted to surviving winter and experience varying degrees of littoral zone freezing because of natural variability. The BLM expects that additional studies of invertebrate communities will be a requirement of post-lease, project-specific permitting requirements. No additional edits were made to the text.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Withheld	Withheld	—	68965	68	Fish and Aquatic Species	37. Chapter 3; section 3.3.2, pages 3-75 to 3-84. Fish and Aquatic Resources. This section provides a reasonable qualitative analysis, but it does not refer to the hypothetical development scenario and thereby misses the opportunity to provide a more detailed and quantitative assessment of program effects. Again, differences in effects associated with different phases of development are presented in a way that makes them difficult to integrate. Please consider revising this analysis to include consideration of all activities, assumptions, and timelines in the hypothetical development scenario	Many of the impacts from different oil and gas phases would occur during one or more phases. The text was edited to clarify during which phases (leasing, exploration, development, operation, and abandonment/reclamation) impacts could occur. Actions from the hypothetical development scenario that are relevant to fish habitat are referenced in this section, and further detail will be provided in site-specific analyses. Due in large part to the lack of available liquid surface waters (in winter) outside of a few pools (Figure 3-12), the Canning River, and several lakes in the Canning River Delta, fish habitat is limited in the freshwaters of the program area. Any analysis of development will be reliant on post-lease sale project footprints to assess impacts on aquatic resources. Current lease stipulations and ROPs will provide protections at the leasing stage while future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Curt	Leigh	—	69329	10	Fish and Aquatic Species	The document reports that direct aquatic habitat impacts would be adverse and long term (EIS p. 3-79). But there is no discussion or evaluation of potential water crossings beyond bridges that are commonly used, like culverts and low water crossings. The EIS fails to assess impacts associated with those other crossing options. It also fails to evaluate proper culvert sizing, streambed stability, fish passage solutions or the substantial aquatic habitat impacts that occur both upstream and downstream from those undesirable stream crossing methods.	Culverts likely would be used extensively under all action alternatives in the future for accessing road water crossings and to provide cross drainage. The design criteria for all culverts would follow USFWS and ADFG requirements; as such, they would avoid restricting fish passage or adversely affecting natural stream flow (ROP 22). Bridges would be required at any stream crossing with anadromous fish use. This information was added to the text. Further specificity is unknown at the planning level and will be addressed in the project-level analysis.
5.	Diane	Viera	—	69368	2	Fish and Aquatic Species	Fresh water is relatively limited on the Refuge Coastal Plain, and the DE IS has not adequately assessed the impacts that industry's water use would have on fish and wildlife.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Kenneth	Nahigian	—	69429	1	Fish and Aquatic Species	DEIS does not adequately assess the impacts of oil drilling on area water, and how this would affect fish and wildlife.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.
7.	Withheld	Withheld	—	69634	4	Fish and Aquatic Species	Fresh water sources are limited on the Refuge Coastal Plain, yet the DEIS does not adequately assess the impacts that increased water use would have on fish and wildlife.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	—	70934	27	Fish and Aquatic Species	Table 3 - 17, The Sadlerochit river has been omitted from this table. What are the values associated with that watershed? It is unique in its hydrology in that it has deep springs and has a connection to deep glacial lakes Neuruokpuk Lakes. Is the omission intentional? If so it needs to be justified. If it was not included in error, it is yet another indication of an incomplete and poorly considered project.	The intention of Table 3-17 was to highlight anadromous fish habitat in the program area. The BLM unintentionally omitted the word “anadromous” from the table title, but it could certainly be inferred from the column headers within. Sadlerochit River was unintentionally omitted due to its current status in the Anadromous Waters Catalog (AWC). Unfortunately, it has not yet been nominated to the AWC at the time of this writing; however, the BLM knows that the USFWS has conducted surveys on the Sadlerochit River and identified it as Dolly Varden habitat. Furthermore, the USFWS has identified multiple springs that provide overwintering habitat for Dolly Varden. This information is noted on Figure 3-12 of the EIS. For clarity, the BLM has added the word “Anadromous” to the title and added the Sadlerochit River to the table. Due to its current ADFG AWC status, the BLM has noted that there are 0 miles of anadromous habitat in the basin and program area (out of 28.5 river miles total in the program area).
9.	Withheld	Withheld	—	70934	28	Fish and Aquatic Species	Page 3-78, In regard to aquatic invertebrates, once again the false assumption that conditions and ecology in the Arctic Refuge are comparable to further west is unfounded and inaccurate. In terms of invertebrate communities, the contribution of glacial silt should be considered and studied for the Hulahula, Jago, and Okpilak rivers along with adjacent watersheds which receive either fluvial, or aeolian deposits of glacial origin such as Nataroarok Creek.	The BLM added additional text for clarity on the lack of surface waters in the 1002 Area compared with the Arctic Coastal Plain and what this means for density and richness of macroinvertebrate communities.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	—	70934	29	Fish and Aquatic Species	Page 3 - 80, in regard to enhanced fish habitat, While technically possible this assertion seems like a simplification of the situation. Deep water is indeed a rarity in the Arctic Refuge and creation of additional habitat would perhaps benefit fish. The larger question is which fish would it benefit and at what stage of life? Would it benefit species that prey on Dolly Varden, an important subsistence resource? A more thorough investigation of this topic is warranted.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. The BLM struck the sentence that implied any possibility of improved habitat for overwintering fish.
11.	Withheld	Withheld	—	70934	30	Fish and Aquatic Species	Page 3- 84 in regard to cumulative impacts on fisheries, It should be noted that anadromous Dolly Varden have low fidelity to natal streams and will visit multiple rivers in the region during their lives. This unusual mobility means that fish who may have hatched in the Hulahula (within the potential lease area) could winter in the Kongakut River within the wilderness portion of the Arctic Refuge. Impacts to Dolly Varden in one river, lagoon, etc, could have consequences in other parts. These impacts have not been explored or mentioned here. This is a significant error and omission.	The BLM understood this comment to suggest that fish that were spawned in a non-impacted area outside the 1002 Area or outside future projects within the 1002 Area may move to areas affected by future development. These impacts could be harmful to stocks in other areas outside the impact zone; however, one could also see this life history trait as a hedge against a squashing of genetic viability long term. The BLM added text discussing the potential for impacts on species, such as Dolly Varden (which do not exhibit site fidelity in the program area), as having wide-ranging, long-term, and potentially deleterious results.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Natalie	Dawson	—	81061	1	Fish and Aquatic Species	ish: Ninespine stickleback, what is distribution in near-shore environment (not specific in DEIS)? Identify amount and location of water to sustain fish species (similar works in other areas); need distribution information for all aquatic habitats that might be considered for exploratory seismic surveys or industrial water use; what are the consequences of harvesting augeis from perennial springs on flow levels downstream the next summer and will the flow be adequate for fish migration?	All available fish distribution information is provided in this EIS. Protections to aquatic areas, including augeis, are detailed in ROPs and lease stipulations. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats.
13.	Todd	Campbell	Conservation Biology course	81185	3	Fish and Aquatic Species	The draft Environmental Impact Statement discusses possible impacts on fish and aquatic species that could occur as a result of the post-lease oil and gas exploration. They identify three main aquatic habitats that are located in the program area; inshore and shore waters of the Beaufort Sea, rivers and streams, and lakes and ponds. Of all these water habitats, only about five percent is available in the winter compared to that of the summer, leaving only about five species of fish able to overwinter. However, as stated in section 3.3.2, page 3-77 of the EIS, some species have been observed overwintering in areas outside Section 1002 and have not been confirmed in the program area. They used "a range of likely species" to present their data so there is a lack of research behind all tables given. Further actions should be taken to confirm which species are present and not present in the area in order to give the most accurate representation.	The BLM concluded that using a "range of likely species" approach is the more conservative path to take regarding fish protection. This approach would more often tend to overestimate the number of fish species rather than underestimate it.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Todd	Campbell	Conservation Biology course	81185	4	Fish and Aquatic Species	Since only five percent of the water in the winter is available for fish to live in, they cannot afford the alteration or loss of the remaining habitat, as they will not survive without it. As page 3-80 of the EIS states, about "95 percent of road dust settles within 328 feet from the road surface", which is a major problem to the waters within that range due to the chemicals that can often mix in. The EIS did not further discuss the effects these chemicals could have on the pH of the water or how the fish could be affected. Further action should be taken to see how damaging these chemicals could be to the fish species present.	The BLM added text for clarity on the lack of surface waters in 1002 compared with the Arctic coastal plain. The BLM added text for clarity and referred readers to the Water Resource section (3.2.10).

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Todd	Campbell	Conservation Biology course	81185	5	Fish and Aquatic Species	age 3-81 of the EIS also discussed water quantity. Post-lease activities may require water withdrawal for multiple uses, decreasing the already low amount of available water in the winter. In lake populations, this could completely remove the species present through decreased oxygen and change in salinity. Further research should be done to examine depth of water and number of species present in the areas chosen for water withdrawal in order to ensure the species can manage the change. Page 3-82 of the EIS discusses the damaging effects of seismic surveys on fish. Unfrozen water provides no barrier between the source and the fish, causing injury, damage of organs, and even death. This was shown in a study done by McCauley et al, where they tested the effects of high intensity sounds from an air gun on pink snapper. They found that the fish's ears were so severely damaged after exposure that regeneration of the sensory hair cells within the ear either delayed or stopped regeneration completely (McCauley et al, 2003). Given all this, the best option would be to work in the winter. That is when there is the least amount of fish species present in the program area and ice frozen over can help protect some habitats below from damage. Looking at map 3-12, the diversity of fish mostly occurs in the far western region of the program area, while the overwintering species can be found in the middle region of Section 1002.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Potential impacts of seismic activities on fish are discussed within the section on Disturbance or Displacement: Noise and Human Activity and further impacts in Chapter 4 of the 2012 IAP/EIS, which is incorporated by reference. Future seismic exploration is proposed to occur during winter (Appendix B, Section B 7.2., Exploration). This is clarified in the text.
16.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	29	Fish and Aquatic Species	ASRC provides the below information which BLM should include in their EIS to assess the habitat creation aspect of gravel excavation that is often overlooked: "Many of the more recently excavated gravel pit site have been flooded to provide ample supply of surface waters for various industrial and domestic uses. Establishing these deep, flooded basins also created unique	The topic of habitat creation is not necessarily overlooked as suggested and may be overemphasized. The BLM did initially offer that this (habitat creation) is a potential outcome of gravel mining activities; however, following the comment period, the BLM decided to strike the mention of habitat creation post

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	aquatic habitats with significant potential to support and enhance local freshwater and anadromous fish."28 "Mining of instream and floodplain gravel deposits offer several distinct advantages over non-floodplain or terrace gravel deposits, including a replenishable supply and a virtually absence of extensive overburden...However, if hydraulic changes can be minimized, scraping or pit excavation mining operations within adjacent high-water channels or abandoned channels may present opportunities for creation of backwater rearing or overwintering habitats for fish if adequate dish passage can be maintained."29 "Mining within the active channels of braided and beaded-tundra streams generally may occur without significant hydraulic risk. These systems are generally devoid of suitable overwintering fish habitat."30 "The oil and gas industry needs gravel and water for oil and gas development. Flooded mine sites can provide for these needs, while providing fish and wildlife habitat upon completion of mining and rehabilitation. When developed in a cellular fashion, portions 28 North Slope Gravel Pit Performance Guidelines; Technical Report No. 93-9. AKDF&G, Habitat and Restoration Division. June 1993. Page 2 29 North Slope Gravel Pit Performance Guidelines; Technical Report No. 93-9. AKDF&G, Habitat and Restoration Division. June 1993. Page 13 30 North Slope Gravel Pit Performance Guidelines; Technical Report No. 93-9. AKDF&G, Habitat and Restoration Division. June 1993. Page 14 19 of large mine sites can be rehabilitated, providing fish and wildlife habitat as well as water for industrial use, while at the same time providing for development within the remainder of the site."31	gravel mining. This is not, or to the BLM's knowledge has never been, a land-use strategy for wildlife refuges. Furthermore, these habitats may require maintenance long term to serve as usable fish habitats. Additional research on the former gravel extraction site conversion to fish habitat in the Arctic coastal plain may be required.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Lisa	Jodwalis	—	94072	3	Fish and Aquatic Species	water quality and quantity for arctic char/Dolly Varden and grayling, which utilize deep pools for overwintering, especially considering the huge amounts of water needed for constructing and maintaining ice roads and oilfield operations and the lack of fresh water sources relative to areas of the North Slope that are west of the Sagavanirktok River;	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.
18.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	25	Fish and Aquatic Species	The draft EIS acknowledges that non-salmon fish, including Dolly Varden and Bering cisco, are important subsistence resources and that there could be subsistence impacts under Alternatives B and C. ³⁵ But, the DEIS brushes aside these potential effects by stating that impacts will be mitigated by Lease Stipulations and ROPs. ³⁶ BLM provides no analysis to support why the Lease Stipulations and ROPs will effectively protect fish habitat.	The lease stipulations and ROPs provide clarity on protections for fish habitat. No changes were made.
19.	—	—	Alaska Department of Natural Resources	94102	61	Fish and Aquatic Species	36 Chapter 3.3.2 Fish, Page 3-78; Table 3-18 Correction The complete scientific name for burbot is Lota lota. The complete scientific name for ninespine stickleback is Pungitius pungitius.	The BLM edited text as recommended.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	—	—	Alaska Department of Natural Resources	94102	62	Fish and Aquatic Species	37 Chapter 3.3.2 Fish, Page 3-79 Supplement analysis - Fish, Climate Change Often changes in climate can result in expansion or contraction of a habitat or range of a fish species. Add to this paragraph some language describing the potential for species (such as Pacific salmon but also others) to begin colonization of newly available habitat.	The BLM added additional text and references.
21.	—	—	Alaska Department of Natural Resources	94102	63	Fish and Aquatic Species	38 Chapter 3, Page 3-80 Revise analysis - Fish and Aquatic Species Comments on gravel mining appear to reflect mining in active channels or floodplains, not adjacent to them. Mining adjacent to active channels would have much lower impact, but this is written to address the worse-case mining scenario, which is quite unlikely to happen. This is biasing the rest of the discussion on this issue.	The BLM added additional text to suggest that mining could occur within channels or in adjacent floodplains, but that it could also occur adjacent to active floodplains; therefore, potential impacts would be greatly reduced.
22.	—	—	Alaska Department of Natural Resources	94102	64	Fish and Aquatic Species	39 Chapter 3.3.2, Fish. Page 3-83 Justify analysis - inconsistencies Alternative B incorrectly states, "overwintering habitat (springs) would be unprotected from both surface development beyond the 500-foot setback for fish-bearing waters and from water or ice withdrawal, which could affect the long-term survival and distribution of freshwater fish in the program area." These spring areas are within the 0.5-or 1.0-mile buffers that are established for specific streams (some containing springs) in Lease Stipulation 1 and are incorporated in Lease Stipulation 3. 40 Chapter 3.3.2, Fish. Page 3-83 Justify analysis - Fish and Aquatic Species Please clarify how springs would not be protected by the 500 ft buffer around fish-bearing streams. Is this because of concerns regarding interception of ground water springs by drilling, VSMs, mine sites or other surface perforations? Please clarify.	The BLM removed the statement "overwintering habitat (springs) would be unprotected from both surface development beyond the 500-foot setback for fish-bearing waters and from water or ice withdrawal, which could affect the long-term survival and distribution of freshwater fish in the program area." The BLM added the following text: "Withdrawal of unfrozen water from springs would be allowed during summer."

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	—	—	Alaska Department of Natural Resources	94102	74	Fish and Aquatic Species	50 Chapter 3, Page 3-248 Revise analysis These comments only list losses due to permanent commitment of resources, and not any associated benefits. As noted earlier gravel mines can be a positive for overwintering fish.	The topic of habitat creation is not necessarily overlooked as suggested; it may be overemphasized. The BLM did initially offer that this (habitat creation) is a potential outcome of gravel mining activities; however, following the comment period, the BLM decided to strike the mention of habitat creation post gravel mining. This is not, or to the BLM's knowledge has never been, a land-use strategy for wildlife refuges. Furthermore, these habitats may require maintenance long term to serve as useable fish habitats. Additional research on the former gravel extraction site conversion to fish habitat in the Arctic coastal plain may be required.
24.	—	—	Alaska Department of Natural Resources	94102	86	Fish and Aquatic Species	62 Appendix K, Fish, Page K-2 Pacific Salmon The paragraph on Pacific salmon gives detailed life history information, implying that there are self-sustaining populations of Chinook, pink, and chum salmon found in North Slope streams. At this time, there is no evidence that Pacific salmon are successfully spawning and rearing North of the Point Hope area, and many in the science community believe that the salmon observed on the North Slope are strays. The reasoning is that upon smolting, juvenile salmon would have to migrate all the way to the southern Bering Sea before the onset of ice formation in the Beaufort Sea. Best evidence is that Pacific salmon cannot tolerate the supercooled water under the ice. There is some research being done on salmon in Beaufort Sea drainages by the Department of Fisheries and Oceans-Canada, but definitive proof of self-sustaining populations has not been found.	The BLM determined no action was required. Any portion of the life history of a Pacific salmon that is spent in these waters dictates that these waters are EFH. Spawning/sustained populations don't factor into the discussion.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Withheld	Withheld	—	94547	4	Fish and Aquatic Species	How will water use related to drilling and ice roads affect fish, habitat, vegetation, and hydrology?	The BLM referred the reader to more detailed accounts in other EIS documents for direct and indirect impacts (NPRA/IAP 2012, Nanushuk 2018, and GMT2 2018).
26.	Tim	Whitehouse	PEER	95601	31	Fish and Aquatic Species	What are the key information gaps: We currently have a good understanding of fish species present in or near the 1002 Area, as well as the types of aquatic habitats they use. We have some information on species presence in specific lakes, streams, and near-shore habitats. We don't have this information for all aquatic habitats that might be considered for exploratory seismic surveys or industrial water use. This information will be important prior to permitting for these activities. We do not have a good understanding of the consequences of harvesting aufeis from perennial springs on flow levels downstream the next summer. Will it be adequate to support fish migration or not? This information will be important prior to permitting the use of aufeis.	The points of the questions and comments were well taken, though they fall within the category of questions "requiring more research." The BLM noted the potential for climate change to affect surface ice thaw, permafrost, and surface waters. No additional text was added.
27.	Tim	Whitehouse	PEER	95601	127	Fish and Aquatic Species	Fish surveys have only been conducted in 2.3% of lakes in the 1002 area and most surveys were brief reconnaissance surveys only targeting nine spine stickleback. Fish distribution models and sample collection protocols have been developed for other areas on the North Slope, but their applicability to the 1002 area is unknown. Macroinvertebrate diversity is an indicator of ecosystem health and has never been assessed in 1002 area. Baseline contaminants surveys of fish have only been conducted at a small handful of sites. To identify high-value aquatic habitats, inform planning, and provide baseline samples there is a need to document fish presence; test the applicability of existing fish survey protocols and distribution models, and collect baseline macroinvertebrate, fish e-DNA, and fish tissue samples to archive for future	The BLM acknowledges there is a dearth of directed fish studies in the 1002 Area Coastal Plain and freshwater environments. The BLM is unfamiliar with the source for the statement that "2.3% of lakes in the 1002 area" have had fish surveys conducted on them. The USFWS has conducted several recent surveys of riverine habitat and fish resources, and long-term ecological research monitoring is now active along the nearshore marine environment of the Beaufort Sea from Utqiaġvik to Kaktovik (including along portions of the 1002 Area coastal lagoon network). In addition to fish surveys, this LTER monitoring will include collection of primary/secondary productivity, chemical/physical oceanography,

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	analysis (for more information, see resource assessment for contaminants). Results would include the following: traditional fish surveys in up to 60 lakes, validation of protocols and fish distribution models for applicability in the 1002 area, baseline macroinvertebrate and fish contaminant samples collected in up to 60 high-priority lakes, and e-DNA samples available to test for fish presence in up to 200 lakes. Refuge staff and two arctic fisheries biologists can conduct this field work in FY18.	food-web dynamics, sea ice studies, and groundwater and nutrient surveys of freshwater/terrestrial sources. Any project-specific permit requests will require information on lake volumes and fish/macroinvertebrate assemblages. The commenter has provided a large list of potential projects and surveys that he indicates can be accomplished in fiscal year 2018 by Refuge staff (plus two Arctic biologists). The BLM would like to hear more about this recommendation and how it could be achieved; however, it should be noted that for the purposes of a lease sale EIS, these studies would be helpful, but they are not currently practical. There will undoubtedly be project-specific survey requirements incorporating many of these types of studies if any project plans are brought forward for permit review. During the post-lease sale, project-specific EIS phase, this comment may provide helpful insights as to the baseline data required to fully assess the project-specific impacts on fish and aquatic resources in the 1002 Area.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Brook	Brisson	Trustees for Alaska	98271	28	Fish and Aquatic Species	Information on fish species habitat use and occurrence within Section 3.3.2 of the DEIS is inadequate to quantify baseline information on fish species. The DEIS significantly underestimates fish species presence, occupancy and habitat use. A rigorous and systematic survey for fish populations abundance, occurrence and seasonal habitat use has not been collected to document how fish species use the CP for reproduction, foraging and survival. Numerous methods that combine eDNA data, intrinsic potential models and radio tracking currently exist which are both feasible and appropriate for the CP (see Falke et al. 2013; Fraley et al. 2018; Matter et al. 2018). Application of such methods to the CP is necessary to adequately describe the affected environment and conduct the required impacts analysis.	Once the lease sale is completed and a project-specific permit application is brought forward, it is likely that several directed surveys will be required by resource agencies (e.g., fish/macrobenthic surveys, hydrology, remote sensing, physical and chemical oceanographic, primary/secondary productivity, and ice surveys). This is beyond the scope for the Lease Sale EIS; however, the BLM refers the reader to lease sale stipulations and required operating procedures outlined in Table 2-2 of Chapter 2 of this EIS for a list of protections afforded fish and fish habitat by alternative.
29.	Harry K.	Brower Jr.	North Slope Borough	95612	38	Fish and Aquatic Species	In discussing the effects of habitat alteration on fish and aquatic species, we recommend that BLM review and incorporate more recent studies on the distribution of dust and gravel spray.	The BLM referred readers to recent EIS documents (GMT2, Nanashuk, and NPR-A/IAP).
30.	Harry K.	Brower Jr.	North Slope Borough	95612	60	Fish and Aquatic Species	3.3.2 3-81 BLM should cite values provided earlier in this DEIS, such as on p. 3-52, Lakes and Wetlands: "The estimated volume of liquid water in these lakes is 1.1 billion gallons by the end of the winter season. Eighty percent of this volume is concentrated in seven lakes in the Canning River Delta. One of these lakes is known to have salinity concentrations close to that of seawater."	The BLM edited text under "Lakes" for additional clarity, making clear to readers that the vast majority of wintertime liquid water (in lakes) is found in just seven waterbodies in the Canning River delta. The BLM referred readers to Section 3.2.10, Water Resources (Lakes and Wetlands) for more detail.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Harry K.	Brower Jr.	North Slope Borough	95612	73	Fish and Aquatic Species	3.4.11 3-245 Potential impacts to the health of the people in Kaktovik include any associated with increased contact with outside project workers, degradation of air and water quality, tainting or perceived tainting of fish or other resources (resulting in decreased consumption or decreased food security). For instance, the presence of mold on broad whitefish in the Nuiqsut area has led to a perceived tainting of fish. BLM should include measures to prevent any increased contamination of areas by fish mold associated with development activities.	The first part of this comment was referred to the resource author for Section 3.4.11, Public Health. Regarding fish mold found on Broad Whitefish near Nuiqsut, preventive measures that would be effective cannot be established because the mold can appear on fish at any time, for a variety of reasons. Although the mold and its causes for Nuiqsut area fish are under investigation, the cause is as yet unknown. The BLM did not add additional text.
32.	Josie	Lopez	—	96188	7	Fish and Aquatic Species	6) Fresh water is relatively limited on the Refuge Coastal Plain, however the DEIS does not adequately assess the impacts that industry's water use would have on fish and wildlife.	The BLM added text for clarity on the lack of surface waters in 1002 compared with the Arctic coastal plain and referred readers to the Water Resource section (3.2.10).
33.	Greta	Burkart	—	96243	88	Fish and Aquatic Species	F.4.13 Fish and aquatic species Comments For impact indicators, consider comparing the total volume of water needed for development in each region (e.g. 250 million gallons) to the estimated volume of liquid water available in in lakes and rivers at the end of the winter season in the 1002 area (about 1 billion gallons, Trawicki et al. 1991 or Lyons and Trawicki 1994). This should also be mentioned in the impacts analysis discussion because it highlights some of the differences between the NPR-A and 1002 Area that will affect the impact analysis.	The BLM added text for clarity and referred the reader to Section 3.2.10, Water Resources.
34.	Greta	Burkart	—	96243	89	Fish and Aquatic Species	F.4.13 Fish and aquatic species Comments Actions for "ice roads and snow management" should include ice bridges since they are much thicker than ice roads and can have a much greater impact on flow.	The ROPs dictate winter stream crossing stipulations and read that any winter stream crossing that is reinforced with additional ice and/or water meets the description of an "ice bridge." These ice bridges must be removed, breached, or slotted at the end of winter operations.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	—	—	United States Fish and Wildlife Service	97942	66	Fish and Aquatic Species	Section 3.3.2 Fish and Aquatic Species, Affected Environment, Page 3-80, last two sentences of last paragraph in section on Direct Habitat Loss or Alteration: The last two sentences in the paragraph suggest that placing gravel mines in river beds and subsequently creating deep water reservoirs could be seen as a long-term benefit for fish in the area. These alterations should be viewed as an anthropogenic alteration of the natural habitat rather than an enhancement. Recommend the last sentence be deleted and the second to last sentence be edited to read, "Following gravel extraction, the excavation can then serve as a water reservoir for industrial activities, which is common practice in other North Slope gravel mines farther west (BLM 2012)."	The BLM edited text as suggested by the reviewer.
36.	—	—	United States Fish and Wildlife Service	97942	67	Fish and Aquatic Species	We recommend adding a description of the seasonal use of the nearshore marine waters and lagoons by fish within Section 3.3.2. This information is important in understanding the seasonal movement of fish and how the proposed activities will affect fish and subsistence users. For instance, as winter approaches and the lagoons begin freezing up, anadromous fishes return to freshwater environments and marine fishes eventually retreat to offshore environments.	The BLM added text for clarity.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	—	—	United States Fish and Wildlife Service	97942	68	Fish and Aquatic Species	We recommend adding a description of the difference between rivers with and without perennial springs. This description would provide helpful background for the proposed protections for perennial springs. It is known that the perennial springs support fish during harsh winters and rivers without springs have no fish. This spring water is believed to be ancient, having fallen as precipitation on the south side of the Brooks Range hundreds to thousands of years ago. All Arctic Grayling and Dolly Varden are major subsistence resources in the Arctic Refuge and their survival depends on approximately twenty springs found within the coastal plain and adjacent foothills, thus they are truly critical habitats. Only four rivers that cross the 1002 Area support major anadromous or endemic fish populations requiring special recognition.	The BLM added text to provide a distinction between the two river types (with citations).
38.	—	—	United States Fish and Wildlife Service	97942	191	Fish and Aquatic Species	While Map 3-12 includes streams in which anadromous fish presence has been documented, and springs that contain resident Dolly Varden and Arctic Grayling, it needs to more clearly indicate that the Canning River supports the greatest diversity of anadromous and freshwater resident fish species in the area: it is not clear from the icons used.	The BLM coordinated with the GIS department to edit the figure.
39.	—	—	United States Fish and Wildlife Service	97942	192	Fish and Aquatic Species	The caption for Table 3-17 suggests that this list of streams includes all fish habitat in the Program Area, yet it only identifies rivers that are classified as anadromous waters and ignores springs such as Sadlerochit Spring that supports resident Dolly Varden and Arctic Grayling. If this table is intended to be a comprehensive list of fish habitat, as the caption suggests, it should identify the rivers, springs, and lakes in the program area that support fish. The associated map (Map 3-13) does not convey much meaningful information. Please consider presenting a figure that illustrates stream monitoring locations.	The BLM coordinated with the GIS department to edit the figure if determined necessary.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	—	—	United States Fish and Wildlife Service	97942	246	Fish and Aquatic Species	[Appendix K and Table K-1] Arctic Cisco habitat use description should delete the words "...freshwater and...", it is extremely rare to find an Arctic Cisco in freshwater at any time except during their spawning runs up the Mackenzie River. Here, it appears to read that one would be equally likely to find them in freshwater or marine environments, which is not accurate.	The text was edited for clarity.
41.	—	—	United States Fish and Wildlife Service	97942	247	Fish and Aquatic Species	[Appendix K and Table K-1] Arctic Grayling spawn in the program area. While, they have rarely been encountered in the fyke net sampling programs that have been operated along the coast, all life stages are abundant in the freshwater drainages that support overwintering fish, including the Canning, Hulahula, and Sadlerochit, as well as in some lakes in the program area.	The text was edited for clarity.
42.	—	—	United States Fish and Wildlife Service	97942	248	Fish and Aquatic Species	[Appendix K and Table K-1] The Arctic Grayling habitat use section should clarify that they live during all seasons in the program area. There are some streams such as the Tamayariak and Okpilak that they occupy during summer only, but those are rivers that share deltas with the Canning and Hulahula rivers, respectively.	The text was edited for clarity.
43.	—	—	United States Fish and Wildlife Service	97942	249	Fish and Aquatic Species	[Appendix K and Table K-1] Burbot likely spawn in the program area. It is true that burbot have never been captured in the fyke net sampling programs that have been operated for more than seven years in the lagoon habitats of the program area and we are not aware of them being captured in the long-term fyke netting programs in Prudhoe Bay. However, they are present in the Canning River and large rivers to the west. Therefore, it is highly likely they spawn in the Canning River. They may spawn upstream from the 1002 Area boundary, but if that uncertainty is a concern, then the answer should be "probably" as to whether burbot spawn in the program area.	The BLM edited the table as suggested.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	—	—	United States Fish and Wildlife Service	97942	250	Fish and Aquatic Species	[Appendix K and Table K-1] Burbot habitat use description should indicate that as a freshwater fish they are present during all seasons in the Canning River, but not elsewhere in the program area. They do not migrate anywhere else for the winter as the column in the table currently reads.	The BLM edited the table as suggested.
45.	—	—	United States Fish and Wildlife Service	97942	251	Fish and Aquatic Species	[Appendix K and Table K-1] Chinook Salmon lifespan should be modified to read "4-7", and age at maturity should be the same. They do not mature at age-1 or age-2, a small fraction may mature at age-3, but for the purposes of this general life history table, maturity at "4-7" would be appropriate.	The BLM edited the table as suggested.
46.	—	—	United States Fish and Wildlife Service	97942	252	Fish and Aquatic Species	[Appendix K and Table K-1] Chum Salmon lifespan and age at maturity should both read "3-6". Age-4 and age-5 are the most common ages at maturity, but ages 3-6 are almost always represented as well in spawning runs.	The BLM edited the table as suggested.
47.	—	—	United States Fish and Wildlife Service	97942	253	Fish and Aquatic Species	[Appendix K and Table K-1] The Chum Salmon habitat use section should be modified by deleting the words "...and foraging...". Similar to Chinook Salmon, Chum Salmon might forage a little in coastal marine water as they approach a spawning stream, but they would not be feeding if they were migrating upstream in freshwater.	The BLM edited the table as suggested.
48.	—	—	United States Fish and Wildlife Service	97942	254	Fish and Aquatic Species	[Appendix K and Table K-1] The Dolly Varden habitat use section reads as though Dolly Varden are common during summer and winter months in coastal and marine waters. This should be reworded to indicate that they are only found in coastal and marine waters during summer months.	The BLM edited the table as suggested.
49.	—	—	United States Fish and Wildlife Service	97942	255	Fish and Aquatic Species	[Appendix K and Table K-1] Least Cisco likely do not spawn in the program area. They occur only rarely in fyke net catches in the region and no lake bound or riverine populations have been discovered in the area.	The BLM edited the table as suggested.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	—	—	United States Fish and Wildlife Service	97942	256	Fish and Aquatic Species	[Appendix K and Table K-1] In the Ninespine Stickleback habitat use section, the wording suggests that they are common during summer and winter months in both marine and freshwaters, but this is not likely. The species is classified as anadromous and does venture into coastal and nearshore marine water during summer but overwinters in freshwater ponds and if available, the lower reaches of rivers. However, none of the rivers in the program area provide brackish interfaces with the sea. Ninespine Stickleback are capable of spawning in both freshwater ponds and in brackish areas.	The BLM edited the table as suggested.
51.	—	—	United States Fish and Wildlife Service	97942	257	Fish and Aquatic Species	[Appendix K and Table K-1] The Pink Salmon habitat use section should be modified by deleting the words "...and foraging...". See related comments on Chum Salmon habitat use above.	The BLM edited the table as suggested.
52.	—	—	United States Fish and Wildlife Service	97942	258	Fish and Aquatic Species	[Appendix K and Table K-1] Round Whitefish likely spawn in the program area. Round Whitefish is a freshwater species found only in the Canning River within the program area, and both adults and juveniles are found there. We have not captured them in the coastal lagoons and bays of the area, but they do spawn in the Canning River. They may spawn in the Canning River upstream from the 1002 Area boundary, but if uncertainty is a concern, then the answer should be "probably" as to whether Round Whitefish spawn in the program area.	The BLM edited the table as suggested.
53.	—	—	United States Fish and Wildlife Service	97942	259	Fish and Aquatic Species	[Appendix K and Table K-1] The Round Whitefish habitat use section should reflect that Round Whitefish is common in the Canning River throughout the year, but not found elsewhere in the program area.	The BLM edited the table as suggested.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Brook	Brisson	Trustees for Alaska	98270	164	Fish and Aquatic Species	Much like the general acoustic impacts section, the fish section of the DEIS fails to address shipping-related noise impacts at all.1932 This is a significant omission because fish have exhibited avoidance behaviors when confronted with noisy vessels, and noise levels from icebreaking can reach levels of up to 190 decibels (dB), which is above the threshold for fish to initiate avoidance behavior.1933 An analysis of the potential shipping and icebreaking noise impacts on fish and essential fish habitat (EFH) near the program area and along the marine shipping route should thus be included in a revised draft EIS.	The section on noise-related impacts was revised to include impacts from shipping and marine barge routes.
55.	Brook	Brisson	Trustees for Alaska	98270	236	Fish and Aquatic Species	BLM failed to adequately consider how oil and gas leasing could significant restrict the availability and abundance of fish as an important subsistence resource. The DEIS brushes aside these potential effects by stating that impacts will be mitigated by Lease Stipulations and ROPs.2113 BLM provides no analysis to support why the Lease Stipulations and ROPs will effectively protect fish habitat. Further, many of the provisions contain discretionary carve outs. For example, Lease Stipulation 1 provides that “[o]n a case-by case basis, essential pipeline and road crossings would be permitted through setback areas,”2114 Lease Stipulation 4 states, “[t]he BLM Authorized Officer may approve infrastructure necessary for oil and gas activities in these critical and sensitive coastal habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines . . . on a case-by-case basis.”2115 Lease Stipulation 9 only requires “the lessee/operator/contractor [to] develop and implement an impact and conflict avoidance and monitoring plan to assess, minimize, and mitigate the effects of the infrastructure and its use on these coastal habitats and their use by wildlife and people” - all without any	Operators are required to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator’s request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	standards for approval.2116 The discretionary nature of these protections will create inconsistent environmental protections and decisions across the Coastal Plain, and the exceptions could ultimately swallow the rule. More robust provisions, tied to meaningful standards must be implemented in order to adequately protect fisheries and other important subsistence resources.	During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. Any future actions or activities are required to receive the appropriate authorizations. Additional project-specific requirements to meet objectives cannot be identified until site-specific development activities are proposed. See Section 3.4.3, Subsistence Uses and Resource, for the full analysis of subsistence resources.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Brook	Brisson	Trustees for Alaska	98270	237	Fish and Aquatic Species	The DEIS further disregards the potential impacts of noise on fish, based on a faulty premise that because seismic activity and pile driving will likely occur in winter that there will be no impact. Many fish that are important to subsistence, including Dolly Varden and grayling, overwinter in large congregations. If these overwintering locations are not known, these subsistence resources could be significantly impacted by winter exploration and development activities. Overwintering locations for fish of subsistence importance should be identified within BLM's analysis. If this information is not known, it should be researched prior to the completion of this document. Moreover, how pile driving, seismic activities, and other winter activities may impact the success of winter fishing should be described in detail.2117	The BLM reviewed this comment in the context of the already identified springs (Figure 3-12; the source is the USFWS). The bulk of habitat for species other than Dolly Varden is located in the Canning River and Staines River area. Additional year-round habitat is limited in streams due to a lack of surface waters, except in springs, which are noted in the document. For noise and other industry-related impacts, the BLM directs the readers to detailed analyses from recent EIS documents (e.g., Nanushuk and USACE 2018). ROP 9 provides protections at the leasing stage for water quantity and quality, and seismic exploration is proposed to occur during winter (Appendix B, Section B 7.2. Exploration). Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Brook	Brisson	Trustees for Alaska	98271	25	Fish and Aquatic Species	The information on fish habitat within the CP program area (Table 3-17; DEIS 2018) is inaccurate and needs to be updated. Fish distribution and habitat use information does not provide a reliable estimate of species-specific habitats for freshwater, anadromous and marine species that inhabit waters within the CP. As stated in Johnson and Blossom (2017), information from the anadromous water catalog (AWC) only reflects the extent of fish surveys or known anadromous fish use in a particular water body (e.g., stream, river, lake) and does not represent species occurrence or habitat use. A variety of habitat variables (e.g., water clarity, river size and depth), sampling methods (e.g., weir, gillnet) and other factors (e.g., remoteness) influence the detection of fish species, which the AWC does not take into account. The data from the AWC is not an accurate assessment of freshwater, anadromous or marine species habitat use. A systematic survey should be conducted to estimate species abundance (see Borchert et al. 2002 for methods) and identify important habitat for reproduction, foraging and survival based on empirical relocation data (e.g., radio tracking), eDNA and intrinsic habitat models that use habitat suitability parameters to estimate habitat use across large spatial extents (e.g. Burnett et al. 2007; Bidlack et al. 2014; Matter et al. 2018). Current estimates of fish-bearing and anadromous streams are incorrect and recent modeled data for a subset of the CP suggest that anadromous fish habitat is much greater (see https://netmap-portal.squarespace.com/#map). While data and scientific methods exist to develop accurate assessments of fish habitat, Section 3.3.2 of the DEIS uses inaccurate and limited data to poorly quantify the affected environment.	The information in Table 3-17 results directly from the ADFG AWC database and reflects the State's legal designation of anadromous water under Alaska Statute 16.05.871(a). These data represent the current knowledge base for fish habitat in the program area, aside from some additional known fish habitat data for springs, which are noted in Map Figure 3-12. Outside of the Canning River, there is little lentic habitat in the program area, which includes year-round water. The BLM provided minor edits to the text and Table 3-17 title for clarity. Once project-specific permits are requested (post-lease sale), it is likely that additional stream habitat and fish surveys will be required.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Brook	Brisson	Trustees for Alaska	98271	26	Fish and Aquatic Species	Estuaries, lagoons and nearshore marine waters are critical habitat features for a variety of aquatic species at various life-stages and seasonal periods (See Craig et al. 1981; Craig et al. 1984; Craig and Haldorson 1985; Craig 1989; West et al. 1992; Underwood et al. 1996; Dutton et al. 2012; Courtney et al. 2018). In addition to serving as important habitat for various fish species, these areas are also designated Essential Fish Habitat (EFH) for Arctic Cod (<i>Boreogadus saida</i>), Saffron Cod (<i>Eleginus gracilis</i>) and Snow Crabs (<i>Chionoecetes opilio</i>). Section 3.3.2 of the DEIS does not provide accurate and detailed information on the landscape features in relation to habitat use to quantify the baseline affected environment.	EFH mapping was determined from ADFG and NOAA databases, which are the legal repositories for up-to-date EFH information at any given time. It is safe to say that all coastal and lagoon waters of the program area are to be considered EFH for at least one species. The Canning and Staines rivers represent the current extent of known EFH for freshwaters of the program area. The subject matter experts produced a separate EFH analysis (post-comment period). The BLM referred the reader to Section 3.3.2 in Chapter 3.
59.	Brook	Brisson	Trustees for Alaska	98271	29	Fish and Aquatic Species	Information on aquatic invertebrate habitat use and occurrence within Section 3.3.2 of the DEIS is inadequate to quantify baseline information on aquatic species. No site-specific information is provided to quantify the distribution, occupancy or abundance of invertebrate species in relation to channel morphology of aquatic habitat. Using the river continuum concept (Vanote et al. 1980), the serial discontinuity concept (Ward and Stanford, 1995), and theory on the tributary influences on network patterns (Fisher 1997), an invertebrate community assessment should be completed that incorporates site-specific information across all streams within the CP. Additionally, references cited in the DEIS are not specific to the CP, are over 18 years old, and do not provide an accurate assessment of the baseline for invertebrate communities. Further, there is no mention of other aquatic species beyond fish and aquatic invertebrates (e.g., plants).	Detailed studies of invertebrate communities in program area streams are sparse or nonexistent. The BLM noted the importance of macroinvertebrates to fish diet and the potential impacts on these resources from grounded ice; however, it is likely that detailed assessments of invertebrate communities will only result from project-specific (post-lease sale) permit requests. As noted in 3.3.2, liquid water is extremely sparse in the program area, limiting invertebrate communities. Section 3.3.1, Vegetation and Wetlands provides a better understanding of riparian and aquatic vegetation communities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Brook	Brisson	Trustees for Alaska	98271	31	Fish and Aquatic Species	The assessment of the direct and indirect impacts from loss of aquatic habitat (both lotic and lentic) from development within the DEIS is not robust and does not accurately describe the impacts. The removal and fill of aquatic habitats will have a variety of direct impacts beyond the described footprint of the development infrastructure (i.e., gravel roads, gravel pads, airstrips, pipelines, culverts, bridges, docks, barge landing zones, gravel mines), which may develop differentially over time (i.e., days-years) causing numerous short and long-term impacts (e.g., Walker et al. 1987; Reynolds et al. 2014). Classification of aquatic habitat based on climate, physiography, geology, fluvial morphology using accurate spatially explicit data (e.g., Benda et al. 2015) is essential to understand the foreseeable impacts, which is lacking in the DEIS.	The issuance of oil and gas leases has no direct or indirect impact on fish and aquatic resources in and of itself; however, post-lease activities may have impacts on these resources. The BLM, therefore, summarized direct and indirect impacts in the context of post-lease activities. In the text, the BLM referred readers to chapter 4 in the 2012 NPRA/IAP where most of these issues are touched on in greater detail. Further analysis will be provided at the site-specific level.
61.	Brook	Brisson	Trustees for Alaska	98271	32	Fish and Aquatic Species	A complete understanding of the surficial hydrology through long term data and hydrologic models is also necessary to understand direct impacts. Alteration of aquatic habitats, which rest above permafrost, will alter surficial and subsurface flow paths, directly impacting streamflow, stream temperature and water quality (Liljedahl et al. 2016; Walker et al. 2019). Changes in water quantity and quality will also have numerous negative direct, indirect and cumulative impacts on the amount of physical habitat in areas, as well as the quality of habitat used for foraging, reproduction and survival, which will cause impacts to aquatic species behavior, physiology, and fitness.	It is not clear that there is a mechanism here to affect water temperature. Many of these concerns were already addressed when discussing water use. Based on what is known, and current restrictions on water use established by ROPs, the magnitude of impacts implied to be inevitable by the commenter is not justified.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Brook	Brisson	Trustees for Alaska	98271	33	Fish and Aquatic Species	Contrary to the DEIS statement (Chapter 3, section 3.3.2, page 3-80), there is not sufficient scientific evidence to support the claim that gravel reservoirs, created through gravel mines, provide biologically beneficial overwintering habitat for fish.	Although there is evidence of flooded gravel extraction mine sites providing fish habitat (e.g., ADFG technical reports from Hemming 1988, Winters 1990, and Roach 1993), the practice of flooded gravel mine use by fish (via natural migration or through fish stocking) may be uncommon. The BLM has removed from the text any indication that this is likely.
63.	Brook	Brisson	Trustees for Alaska	98271	34	Fish and Aquatic Species	The assessment of the direct and indirect impacts from industrial road crossings within the DEIS is not robust and does not accurately describe impacts. Roads, bridges and culverts have been shown to alter surface hydrology through channelization and redistributing of flow to stream crossings (Wemple et al., 1996), which can destroy or create wetlands, reduce fish movement (Warren and Pardew, 1998; Trombulak et al. 2000) and restrict access to seasonally important habitat (Brown and Hartman, 1988). Additionally, previous research has shown that vehicle traffic has the potential to introduce heavy metals, ozone and nutrients to roadside aquatic environments (Lehane et al. 1992; Schuler and Relyea 2018), which has the potential to be transported throughout aquatic systems (Gjessing et al. 1984; Schuler and Relyea 2018) and harm aquatic biota. Industrial road crossings will also affect the instream physicochemical habitat of rivers and streams. Due to upstream constriction effects, culverted streams are associated with higher percent fine sediment, water temperature, water depth and turbidity, as well as lower dissolved oxygen and water velocity (MacPherson et al. 2012; Maitland et al. 2016), and sediment impacts will extend hundreds of meters downstream for each culvert (Lachance et al. 2008). Road culverts also have the potential to block or restrict fish passage	The BLM referred the reader to Section 3.2.10, Water Resources for more detail on direct and indirect impacts on water resources in the program area. Additionally, the BLM referred the reader to the 2012 NPRA/IAP EIS and GMT-1 EIS for a more detailed description of direct and indirect impacts on fish and aquatic resources.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	at critical periods (see Morris and Winters, 2008 for Alaska specific example), which could add additional stress on populations during periods when resources are limited (Furniss et al., 1991; Warren and Pardew, 1998). Bridge crossings also contribute to increased sediment inputs from erosion at exposed road crossings; while over time stabilization can occur, storm or flood events (common in the CP) can continually reactivate erosional processes (Maitland et al. 2016). Changes in aquatic habitat quality can directly and adversely impact fish and aquatic species and, by increasing instream sediment (suspended and deposited), will likely impact Arctic fish species in the CP over different time periods (days?years) by reducing embryo survival, altering feeding behavior, and changing species abundance and richness (Chapman et al. 2014) in CP rivers and streams. The indirect impacts of road crossings in the CP will likely include at least some mortality, reduced fitness, and changes in population abundance in impacted areas, and may also impact population genetic and life-history diversity over the long term. This must be accounted for in the DEIS.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Brook	Brisson	Trustees for Alaska	98271	35	Fish and Aquatic Species	The assessment of the direct and indirect impacts from water extraction and redistribution on fish and aquatic species within Section 3.3.2 of the DEIS is inadequate to evaluate direct and indirect impacts of proposed development. In order to quantify the potential impacts of industrial water consumption (e.g., ice roads, drilling, camp facilities) and redistribution on fish and aquatic species, several analyses need to be completed for the CP including: a specific lake network classification following methods in Jones et al. (2017); a physically-based 3D hydrology model to model water movement; a systematic survey of aquatic habitat, in combination with seamless digital layers, to develop hierarchical habitat information (see CHaMP 2015); and finally systematic fish surveys across the CP in combination with fish habitat models to quantify fish habitat at the species level.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Brook	Brisson	Trustees for Alaska	98271	36	Fish and Aquatic Species	Industrial water use in winter and summer will extract water and ice from lakes, rivers, springs and groundwater, which is hydrologically connected to a variety of features, and has the potential to reduce habitat and redistribute water in patterns that may negatively impact fish and aquatic species. For example, removing water or ice from lakes and rivers during winter has the potential to impacts fish and aquatic species by reducing dissolved oxygen, decreasing overwintering and littoral habitat, fracturing migration corridors, and freezing sediments in littoral areas, which may kill fish eggs and invertebrates or cause physiological stress, which can affect growth, reproduction or survival (Cott et al. 2008; Cott et al. 2015). The DEIS estimates that a tremendous amount of water (420,000 to 1,900,000 gallons) would be required to complete each well and another 2,000,000 gallons per day would be required to maintain each well during production. Extraction of water in this quantity from industry preferred water sources on the CP (groundwater aquifers, lakes and rivers) is likely to cause major changes in groundwater and surficial flow paths affecting water quantity across all hydrologically connected habitats. Subsurface groundwater movement in the CP is largely unknown and likely complex due to permafrost (see Kane et al. 2013; Walvoord and Kurylk 2016). If current groundwater hydrological connectivity is altered by water extraction, there could be severe impacts to biologically important aquatic landscape features fed by groundwater (i.e., karst springs, lakes or rivers). The biological impacts and consequences of altering streamflow or water quantity for fish (particularly Dolly Varden and Arctic Grayling) and aquatic species are not adequately addressed in the DEIS.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. An assessment of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed and specific quantities of water requested for withdrawal are identified. For additional information on current liquid-water availability in the program area versus typical requirements for post-lease oil and gas activities, refer to Section 3.2.10, Water Resources.

S. Public Comments and BLM Responses (Fish and Aquatic Species)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Brook	Brisson	Trustees for Alaska	98271	37	Fish and Aquatic Species	The assessment of direct and indirect impacts of habitat alteration within Section 3.3.2 of the DEIS is inadequate to evaluate impacts of proposed development on fish and aquatic species. Limited information exists on streamflow regimes and is inadequate for quantifying direct and indirect impacts to fish and aquatic species. The natural flow regime is a critical element that maintains biodiversity and ecosystem integrity in lotic systems, and altering the historical flow regime will have negative impacts to aquatic species in rivers and streams (Poff et al. 1997). New data on seasonal streamflow regimes that quantifies critical components of flow regimes (i.e., magnitude, frequency, duration, timing, rate of change) needs to be collected and methods should be used to quantify streamflow metrics (see Olden and Poff 2003).	The BLM acknowledges that any future project-specific permit requests (post-lease sale) will require their own NEPA analysis. A primary concern for any developer requesting project-related permits will be the issue of water availability for project activities. Once specific future project activity footprints are determined and water needs are identified, specific studies of flow regimes can be undertaken. At this time, there is no proposed development on which to determine impacts on fish and aquatic species. For a better understanding of current hydrologic conditions in the program area, the BLM referred readers to Section 3.2.10, Water Resources; this section deals directly with hydrologic issues.
67.	Brook	Brisson	Trustees for Alaska	98271	38	Fish and Aquatic Species	Thermal regimes are another critical element that regulates metabolism in fish and invertebrates, influencing growth, phenology and survival, which in turn influences foodwebs and aquatic species communities (Caissie 2006; Webb et al. 2008; Steel et al. 2017). No information is provided on stream thermal regimes, which is essential and necessary baseline information to quantify impacts of habitat alteration on aquatic species. Development will likely impact thermal regimes by reducing the quantity of water in certain habitats. Those foreseeable impacts have not been considered in the DEIS.	No edits or additions to the text were made at this time, as it is unclear what mechanism of potential impacts on thermal regimes would occur during oil and gas operations. The analysis of potential impacts on hydrology does not demonstrate that streamflow would be substantially reduced by activities.

S.3.15 Freedom of Information Act Requests

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	72125	3	FOIA	Following Freedom of Information Act processes, on December 21, 2018, I requested information to inform my comments on the DEIS. This FOIA request is yet to be acted on by the BLM. This information would have improved the quality of these comments. The following are key elements of the FOIA requested. This information should be openly available to the public in future Coastal Plain land use planning and NEPA processes. * A copy of the interagency agreement and other related correspondence that addresses cooperation between the U.S. Bureau of Land Management and the Fish and Wildlife Service, which should describe the roles and responsibilities of the Lead Agency and Cooperating Agency in the planning for the Coastal Plain of the Arctic National Wildlife Refuge (DEIS 1.7.1). * Reasonably foreseeable development scenarios for oil and gas resources is discussed in Appendix B of the DEIS. I would appreciate receiving the following geospatial datasets that address full potential development footprint scenarios- - Surface routes of expected oil and gas 3-D exploration surveys. - Projected locations of the following facilities and developments for each RFD scenario/alternative: production pads, standard roads, ice roads, gravel mines, pipelines to be used to transport oil, airfields, helipads, arctic seawater treatment plants, water diversions and withdrawal areas, oil storage tanks, and other infrastructure such as production and support facilities including housing and offices.	The Department is still processing numerous FOIA requests regarding the Coastal Plain and is posting many of those requests in its FOIA reading room at https://www.blm.gov/about/foia/foia-reading-room.

S. Public Comments and BLM Responses (Freedom of Information Act Requests)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	3	FOIA	Gwich'in Steering Committee submitted a FOIA request on January 23, 2019, requesting communications and records concerning the Agreement between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd and the U.S.-Canada International Porcupine Caribou Board. ⁴ These records are now overdue in violation of FOIA. Our intent was to use the disclosed records to further inform our people and develop these comments on draft EIS. By withholding the requested records, BLM further inhibits our ability to engage in this process.	The Department is still processing numerous FOIA requests regarding the Coastal Plain and is posting many of those requests in its FOIA reading room at https://www.blm.gov/about/foia/foia-reading-room .

S.3.16 Geology and Minerals

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Beth	Davidow	—	28080	1	Geology and Minerals	I strongly urge the BLM to slow down and take the necessary time to definitively understand how seismic testing will affect the Refuge. Even the Earthquake Center in Fairbanks stated, that "...this region is poorly understood and the behavior of the fault or faults responsible for today's earthquake are not known." We know that a significant rise in earthquakes now occurs in states such as Oklahoma, Arkansas, Texas, and Ohio due to seismic & fracking activity. There is just not enough information about the Arctic region to surmise anything different could occur on the Refuge should such activity take place.	Documentation of instances in which seismic surveys for oil and gas exploration caused earthquakes could not be found. Fluid injection-induced seismicity is addressed under Direct and Indirect Impacts in Section 3.2.5, Geology and Minerals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Dixon	Jones	—	55185	1	Geology and Minerals	pages 3-29 and 3-30, having to do with Geologic Hazards---Earthquakes and Surface Faults. The paragraphs referenced above mention a magnitude 6.4 earthquake less than 10 miles south of the Coastal Plain, and an immediate 6.0 aftershock, on August 12, 2018. However, the report does not mention the generally increased seismic activity in this region in the six months since the August 12 quakes. The Alaska Earthquake Center's 2018 year in review, http://earthquake.alaska.edu/2018-year-review states that "This region [southern border of the Coastal Plain] is poorly understood," directly contradicting the EIS statement that "the Coastal Plain is in an area of relatively low seismic risk." Indeed, the Alaska Earthquake Center states that the August 12 quakes generated "over 4,000 aftershocks, and the sequence is ongoing." I am deeply concerned about the effects of "seismic surveys and exploration" in this region, and the poor effort the USGS has made to address the sudden appearance of significant seismic activity in the Coastal Plain region.	Section 3.2.5, Geology and Minerals reflects current information regarding earthquakes in the program area. The text describes earthquakes that followed the M 6+ events and states that aftershocks are expected to slowly decline but remain active for many weeks or months. According to the University of Alaska Fairbanks Earthquake Center, as of March 31, 2019, numerous earthquakes less than M 4 and several between M 4 and 5 have continued to occur in the seismically active area about 50 miles south-southwest of Kaktovik. This update has been added to the EIS.
3.	Withheld	Withheld	IRIS USArray	57852	1	Geology and Minerals	The ANWR EIS vol 1 describes recent earthquake activity on page 3-29, and in this section does not mention any potential for oil and gas development to affect seismicity due to injection.	Fluid injection-induced seismicity is addressed under Direct and Indirect Impacts in Section 3.2.5, Geology and Minerals.
4.	Withheld	Withheld	IRIS USArray	57852	2	Geology and Minerals	To share my own opinion; The seismic hazard may be under estimated and the limited historical record is very likely to be affected, in frequency of occurrence or size of earthquake, as a result of any injection. The earthquake hazard is a concern primarily to the oil and gas infrastructure which should be designed to withstand significant seismic events, at least at the level observed in August 2018 M6.4.	Future oil and gas development would be required to comply with state and federal safety standards, including applicable seismic design requirements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Sharon	Mathe	—	69361	2	Geology and Minerals	We ask for a study of any underlying faults be taken. Drilling is well known to cause even more earth quakes.	Documented faults and structural features associated with earthquakes are described in Section 3.2.5, Geology and Minerals. A field study to identify faults in the program area is outside the scope of this EIS.
6.	Withheld	Withheld	—	70934	19	Geology and Minerals	Page 3-32 and 3-33, Regarding statements about hydrology: Run-off patterns are quite different in the Arctic Refuge where much of the snowmelt comes from a higher altitude and we have hydrology influenced by glacial melt	The existing text: "The spring warming period would begin earlier...described in more detail in the GMT2 Final SEIS (BLM 2018a, Section 3.2.4)," has been replaced with: "The Arctic Refuge Revised CCP (USFWS 2015a) predicts that climate change will result in earlier break-up and delayed freeze-up. These changes could affect flooding conditions in the program area."
7.	Wolfgang	Rehor	—	74318	4	Geology and Minerals	Seismic tests with long term impacts on the ground, on permafrost, water flows and destruction of vegetation as well as possibly increasing risks of earthquakes. Since in this area several earthquakes happened during the last years, with an increase of earthquakes in 2018, and since this area has special tectonic characteristics, the risks of earthquakes are unpredictable, the impacts on the environment in combination with Development infrastructure a nightmare.	Impacts of seismic surveys on soils, permafrost, water resources, and vegetation are addressed in the respective resource sections. Seismic surveys have not been identified as a trigger for earthquakes.
8.	Robert	Holbrook	—	81403	1	Geology and Minerals	After new information concerning on going problems with 14 BP shut in wells from melting around the casings and now the revelations this week that another 1800 may be indangered I believe the BLM risk accessmant in the Coastal Plain Draft EIS is woefully lacking on effects of permafrost melt.	Section 3.2.5, Geology and Minerals addresses the issue of permafrost thaw around wells and states that this type of failure can be minimized by modern well construction. Permafrost thaw is further described in this section as well as Section 3.2.8, Soils.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Mark	Jorgenson	—	94411	21	Geology and Minerals	There are inconsistencies among these maps that have important implications for the evaluation of Alternatives that need to be resolved. In particular, the Jorgenson et al. (2015) map shows widespread distribution of eolian silt across the Foothills region. The extremely ice-rich Pleistocene deposit (yedoma) can have thaw settlement potential of up to 30 m (discussed more thoroughly in the permafrost section below). Although one section of yedoma was studied in an exposure along Camden Bay (Kanevskiy et al. 2013), the characteristics and distribution of this deposit are poorly quantified and mapped. Because of the potential for huge landscape-scale changes resulting from disturbance, this issue needs to be thoroughly investigated.	The generalized geology map from Jorgenson et al. (2015) has been added to Appendix A. Text regarding the eolian silt deposits shown in this map has been added to Section 3.2.5, Geology and Minerals. The potential for thaw settlement (up to 98 feet) in ice-rich permafrost soils is described under Subsidence. Measures to minimize the potential for subsidence are described in the Direct and Indirect Impacts section.
10.	Mark	Jorgenson	—	94411	22	Geology and Minerals	As currently presented, the one paragraph on subsidence is inadequate to address permafrost issues, especially in context of evaluating alternatives (see permafrost section for a more complete discussion).	Some additional detail has been added to the Affected Environment discussion of subsidence in Section 3.2.5. Measures to minimize the potential for subsidence are described in the Direct and Indirect Impacts section. Permafrost issues are further addressed in Section 3.2.8, Soils.
11.	Mark	Jorgenson	—	94411	24	Geology and Minerals	The discussion on coastal erosion and storm surges, while identifying the problem is woefully inadequate. The section should provide a map of current shoreline erosion rates.	Shoreline erosion rates are described in the text. The reader is referred to four sources for additional details regarding shoreline erosion and storm surge along the Beaufort Sea coast, including one source newly added (Jones et al. 2007).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Mark	Jorgenson	—	94411	25	Geology and Minerals	It should summarize the many issues of coastal erosion and storm surges that have already affected the Kaktovik airstrip, the Kaktovik DEW line and landfill, the Beaufort Lagoon DEW line site, past storm surge flood elevations, effects of currents on nearshore sediment transport, and storm flooding of barrier islands and nesting habitat. This should be followed up through forecasting of future wave climates and coastal erosion under reduced sea ice conditions.	Text regarding coastal erosion and storm surge in the Kaktovik area has been added to Section 3.2.5, Geology and Minerals. Modeling future wave climates and coastal erosion under reduced sea ice conditions is outside the scope of this EIS.
13.	Mark	Jorgenson	—	94411	26	Geology and Minerals	The section on slope failures is inadequate. While the section identifies landslides and thaw slumps as particular hazards, there is no quantification of where they occur and what specific areas might be a risk. For example, numerous large thaw slumps are present in the eolian silt deposits along Camden Bay (pers. obs.). Quantification of the abundance, historical frequency, and distribution is needed to adequately assess facility placement and the potential impacts of the Alternatives.	A detailed field survey of the program area for landslide and slump hazards is outside the scope of this EIS. Such surveys would typically be done on a project basis to identify specific hazards for a future development project.
14.	Mark	Jorgenson	—	94411	27	Geology and Minerals	The section on flooding, ice jams, and aufeis is inadequate, although I recognize there is overlap with the Hydrology section. Additional, surficial geology mapping should be done to differentiate between active, inactive, and abandoned floodplains, as this mapping has utility for characterizing flooding regimes and ground ice, as was done in the EIS processes for Alpine and NPRA developments.	Surficial geologic mapping is outside the scope of this EIS. Future on-the-ground actions would require more specific analysis of flooding regimes and ground ice within the proposed project area.
15.	Harry K.	Brower Jr.	North Slope Borough	95612	31	Geology and Minerals	In its discussion of geologic hazards, the DEIS acknowledges the impacts associated with coastal erosion and storm surge. We note that the analysis does not provide a temporal scale, which makes it difficult to evaluate the potential impacts.	Average and maximum shoreline erosion rates described in Section 3.2.5, Geology and Minerals, are given in feet per year, which provides temporal context. The reader is also referred to several sources for additional details about shoreline erosion and storm surge along the Beaufort Sea coast.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Brook	Brisson	Trustees for Alaska	98269	72	Geology and Minerals	The DEIS states that "the Coastal Plain is in an area of relatively low seismic risk. This risk may be revised in the future, based on August 2018 seismic activity..." ⁴⁷⁴ Since the August 12, 2018 magnitude 6.4 earthquake that occurred 52 miles southwest of Kaktovik, "the largest earthquake ever recorded north of the Brooks Range in Alaska," ⁴⁷⁵ there have been numerous earthquakes in the region above magnitude 4.0. BLM needs to work with USGS' seismic experts to review aftershock and other more recent data compiled since August 2018 and reassess the likelihood of seismic risk in the region.	Section 3.2.5, Geology and Minerals reflects current information regarding earthquakes that have occurred in the program area. According to the University of Alaska Fairbanks Earthquake Center, numerous earthquakes less than M 4 and several between M 4 and 5 have continued to occur in the seismically active area about 50 miles south-southwest of Kaktovik. The USGS improves and updates its seismic hazard maps on a periodic basis by incorporating new information. A quantitative seismic hazard analysis specific to the Coastal Plain is outside the scope of this EIS.

S.3.17 GIS Data and Analysis

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Chad	Hansen	—	56842	2	GIS data and analysis	It does not show the sprawling nature of oil development under the different action alternatives on a map which would allow the public to visualize and comment on the extensive nature of the development.	At the leasing stage, it is unknown where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
2.	Withheld	Withheld	—	59376	9	GIS data and analysis	It is difficult to comprehend the EIS Maps 2-1 to 2-8 without overlaying hypothetical infrastructure. I understand BLM does not have a site-specific pro-proposal to analyze, but you could make some reasonable assumptions. Your ability to present lease stipulations/ROPs on maps suggests you have some idea. You could also look to the Prudhoe Bay Project EIS	At the leasing stage, it is unknown where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
3.	Withheld	Withheld	—	59376	10	GIS data and analysis	Draft EIS Maps 3-10 to 3-2712 show an area with high biodiversity of the top species and doesn't even capture the species lower on the food chain that sustain those species. Even with the best of intentions, I do not think the measures will be effective to preserve the species and habitats.	Maps may only be made with available GIS data. Data for species lower on the food chain, such as insects, small mammals, or reptiles, were not available and therefore were not included. The commenter did not suggest a missed data source nor provide data to the BLM for species lower on the food chain.
4.	Martha	Raynolds	—	67039	20	GIS data and analysis	Map 3-4 should be the surficial geology map according to the text, but there is no such map. The linked pdf is a second copy of the hydrocarbon potential map.	Draft EIS Figure 3-4 was "Generalized Surficial Deposits of the Coastal Plain Area." Draft EIS Map 3-4 is "Map 3-4: Hydrocarbon Potential, Alternative B." The Final EIS includes a "Generalized Geology" map.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Withheld	Withheld	—	69211	5	GIS data and analysis	Maps are provided that identify the habitat of native people subsistence areas, terrestrial and marine mammals and birds. The maps refer to outdated data including but not limited to data from 2004, 1979, 2006 and so on. At a minimum and as is required in any minor project's DEIS, data should be current.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
6.	Linda	Serret	—	69357	5	GIS data and analysis	It is difficult to comprehend the EIS Maps 2-1 to 2-8 without overlaying hypothetical infrastructure. I understand BLM does not have a site-specific proposal to analyze, but you could make some reasonable assumptions. Your ability to present lease stipulations/ROPs on maps suggests you have some idea. You could also look to the Prudhoe Bay Project EIS9 and Google Earth. ¹⁰ The conceptual looks pretty accurate as to what actually happened on the ground.	At the leasing stage, it is unknown where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Rosa	Brown	Vuntut Gwitchin Government	74326	26	GIS data and analysis	Map 1. Gwich'in and Caribou in Northern Yukon and Alaska. (See attachment) This map shows the transboundary nature of the range of the Porcupine caribou herd and its associations with the Gwich'in. Also depicted is the transboundary homeland of the Van Tat Gwich'in/ Crow River, the traditional homeland of the Vuntut Gwitchin First Nation, and locations of caribou fences (corral) that used in the past on both sides of what is now the Canada/US border. Vuntut Gwitchin First National and Shirleen Smith, 2009, People of the Lakes: Stories of our Van Tat Gwich'in Elders/ Googwandak Nakhwach'anjoo Van Tat Gwich'in. Map 2. Vuntut Gwich'in Traditional Territory (See attachment) This Map shows the homelands of the Vuntut Gwitchin First Nation, locations of traditional caribou fences placed along the migratory routes of the Porcupine Caribou Herd, and the location of the community of Old Crow. The Map depicts the Arctic National Wildlife Refuge and adjacent Protected Areas in Canada, including Vuntut National Park, which the Vuntut Gwitchin First Nation co-manages with the Government of Canada. Vuntut Gwitchin First National and Shirleen Smith, 2009, People of the Lakes: Stories of our Van Tat Gwich'in Elders/ Googwandak Nakhwach'anjoo Van Tat Gwich'in. Vuntut Gwitchin Government Heritage Branch, compiled by Shirleen Smith. Vadzaih: Van Tat Gwich'in Knowledge of Caribou. March 2017. Vuntut Gwitchin First National and Shirleen Smith. People of the Lakes: Stories of our Van Tat Gwich'in Elders/Googwandak Nakhwach'anjoo Van Tat Gwich'in. 2009.	Maps have been included that more clearly depict the entire range of the PCH.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	7	GIS data and analysis	ASRC recommends BLM format their maps similar to how calving is portrayed in the CCP (See Below); i.e. broken out annually and showing the calving habitat in both Canada and Alaska.	The BLM added a map, Porcupine Caribou Herd Calving Areas 1983–2018. The map shows calving extent and annual calving grounds. This map is similar to USFWS CCP map 4-9, Porcupine Caribou Herd Calving Areas (1983–2010), except the BLM's map has 8 more years of data.
9.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	19	GIS data and analysis	First, throughout the document, there are instances of unclear or missing references to what data used and how it was analyzed. We prefer the format 2013 NPR-A IAP/EIS that clearly introduces and explains the data used in each section to provide clarity and transparency throughout the EIS and the associated analysis. Of particular concern, is that the Caribou Maps (Maps 3-21, 3-23, and E-1) do not provide any information on the source of origin beyond the date the GIS was mapped. There is no information on who collected the data nor what years are presented. Further, the maps are not consistent with the maps on the PCH that we have seen from Alaska Department of Fish and Game ¹² , which monitors the Porcupine Caribou Herd, nor the Fish and Wildlife Service's (FWS) 2015 Comprehensive Conservation Plan (CCP) ¹³ for the Refuge, both of which show that in recent years, the PCH reliance on the Coastal Plain for calving is generally decreasing. This supports the Traditional Knowledge that hunters from Kaktovik have shared; that they have noticed changes in the PCH movements on the calving grounds and they do not come near the village of Kaktovik in their migration, preferring to remain in the foothills of the Brooks Range to calve before continuing on their migration.	Changes made to Draft EIS Maps 3-21, 3-22, and 3-23. The year spans, season names, more information on sources, and how the areas were defined were added to the maps. Also, the BLM added a map, Porcupine Caribou Herd Calving Areas 1983–2018. The map shows calving extent and annual calving grounds. This map is similar to USFWS CCP map 4-9, Porcupine Caribou Herd Calving Areas (1983–2010), except the BLM's map has 8 more years of data.

S. Public Comments and BLM Responses (GIS Data and Analysis)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	22	GIS data and analysis	The BLM should also expand the maps included in the DEIS to show both the Program Area and the Canadian Arctic. As displayed in the DEIS, one might think that the PCH only uses the 1002 Area for calving, which is clearly untrue. VOICE prefers the below format used in the CCP to present caribou data and PCH calving patterns: ---image---	Maps have been included that more clearly depict the entire range of the PCH.
11.	Ruth	Wood	—	92475	11	GIS data and analysis	The Draft EIS has no complete map of what development will look like. For each alternative, there needs to be a map that shows what full build out would look like with ice roads, gravel roads, drill pads, pipe lines, buildings, gravel pits all shown. Given the narrowness of the Coastal Plain, a simple map that dropped a map of the current development, at Prudhoe Bay including ice roads and pipelines would show that we are not talking about a simple 2000 acre footprint here.	At the leasing stage, it is unknown where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.
12.	Ruth	Wood	—	92475	12	GIS data and analysis	The Map index with title is a separate document. The map documents, themselves, have just a map number with no title. That makes it very difficult to find a map, and demonstrates that this Draft EIS was put together too fast and is less than thorough. This Draft EIS is complicated, and it is unfair to lay reviewers to make it so difficult to read.	Draft EIS maps were available in two formats: 1) in the complete Volume 2 EIS and 2) individually (the smaller file size helps rural Alaskans with slow internet connections). The individual maps were named according to map number and a description of the map, for example, "Coastal Plain Map 2-1, Alternative B" and "Coastal Plain Map 3-3, Oil and Gas Infrastructure." All maps were provided with a map title and map number for reference.

S. Public Comments and BLM Responses (GIS Data and Analysis)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	—	—	Alaska Department of Natural Resources	94102	78	GIS data and analysis	54 Appendix A, Maps 3-21, 3-22, 3-23, Clarification The timeframe for the years of data should be included for each image (e.g., 22 years of data spans 1980 to 2002? 1990 to 2012?). The data source should reference the original or significant sources rather than BLM GIS.	Changes made to Draft EIS maps 3-21, 3-22, and 3-23. The year spans, season names, more information on sources, and how the areas were defined were added to the maps. Also, the BLM added a map, Porcupine Caribou Herd Calving Areas 1983–2018. The map shows calving extent and annual calving grounds. This map is similar to USFWS CCP map 4-9, Porcupine Caribou Herd Calving Areas (1983–2010), except BLM's map has 8 more years of data.
14.	—	—	United States Fish and Wildlife Service	97942	193	GIS data and analysis	General to mapping springs, fishery resources, and water resources: Sadlerochit Springs is not a direct tributary to the Sadlerochit River. It originates west of the Sadlerochit River and is a tributary to the Itkilyariak River. Recommend correcting this information where appropriate.	The BLM, the USFWS, and EMPSi reviewed the locations of Sadlerochit springs and aufeis. The Draft EIS affected environment Map 3-12, "Fish Habitat and Distribution" displays both Sadlerochit springs. Spring name labels were added to the map for all named springs. The aufeises were added to the Fish Habitat and Distribution map.
15.	Valanne	Glooschenko	—	98147	3	GIS data and analysis	Another major deficit in the EIS is it does not show the sprawling nature of oil development under different action alternatives on any of the plans to allow people to visualize and comment on the extensive nature of the development. The public has a right to full disclosure of the impacts that would result from each of the four alternatives, but these are demonstrably missing. They are absent from the draft EIS, which is an extraordinarily critical deficit.	At the leasing stage, it is unknown where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Brook	Brisson	Trustees for Alaska	98271	120	GIS data and analysis	The lack of clear information about data sources for Maps 3-21, 3-22, 3-23 and E-1 combines with a complete lack of description about how the figures were made to make it difficult to evaluate how well they represent seasonal distributions of caribou. The PCH distribution figures in Map 3-21 state the number of years of data going into each depiction, but not what those years are or how many individuals are represented in each. Furthermore, they do not specify whether the years included were consecutive or if some years were omitted. Nor do they make it clear how they account for changing scientific research methods and technology over time. It is also notable that Map 3-23 lists a different number of years depicted for the calving period with cows and calves than that shown in Map 3-21 (37 years in 3-21 versus 34 years in 3-23). No explanation is given for why this is different.	Changes were made to Draft EIS Maps 3-21, 3-22, and 3-23. The year spans, season names, more information on sources, and how the areas were defined were added to the maps. Also, the BLM added a map, Porcupine Caribou Herd Calving Areas 1983–2018. The map shows calving extent and annual calving grounds. This map is similar to USFWS CCP map 4-9, Porcupine Caribou Herd Calving Areas (1983–2010), except the BLM's map has 8 more years of data.

S.3.18 Government-to-Government Consultation

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	67653	1	G2G Consultation	BLM has not consulted with all of the Gwich'in tribes (as required by law). The BLM must allow all community members to have a voice in this process. The Refuge also fulfills US-Canada treaty obligations related to the conservation of the Porcupine Caribou herd. The agency must detail how exactly it will fulfill those treaty obligations if it allows oil and gas development in the region.	The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.
2.	Peter	Lent	—	96105	1	G2G Consultation	I-5. The International Porcupine Caribou Board is mentioned but there is no indication of whether or not input has been solicited or received.	The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Rosa	Brown	Vuntut Gwitchin Government	74326	2	G2G Consultation	* The Vuntut Gwitchin Government formally requests the Bureau of Land Management re-open the public comment period on the draft EIS, and that public meetings are held in the Vuntut Gwitchin First Nation community of Old Crow, Yukon, and other Canadian communities to discuss the Coastal Plain oil and gas leasing program draft EIS. * The Vuntut Gwitchin Government formally requests that Bureau of Land Management hold a public subsistence hearing per ANILCA Section 810 in Old Crow, Yukon, and meets consultation requirements with the Vuntut Gwitchin First Nation. * The Vuntut Gwitchin Government formally requests an extension of 60 days to comment on the draft EIS, to provide time for meetings and hearings to occur in Old Crow and Canada, and provide any additional comments the Vuntut Gwitchin First Nation may further identify as a result; and finally, * On release of a revised EIS, the Vuntut Gwitchin Government formally requests public meetings and hearings in Old Crow, Yukon and other Canadians communities.	The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.
4.	Joan	Norberg	Yukon Conservation Society	57318	4	G2G Consultation	The communities of Old Crow and Dawson City in the Yukon, and Inuvik, Aklavik, Tsiigehtchic, Fort McPherson and Tuktoyaktuk, in the Northwest Territories, all harvest caribou from the PCH. For some of these communities, notably Old Crow, Yukon, a collapse of the PCH would create a cultural and health catastrophe. It was the very severe consequences of significant disruption to the PCH that led the United States to join with Canada in signing the IPCA. Respectful engagement with communities that depend on the Porcupine herd is at the heart of the IPCA. Therefore, YCS respectfully recommends that consultations take place in the affected communities in Canada.	The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	5	G2G Consultation	BLM does not provide a list of the tribal governments that the agency reached out to for purposes of government-to-government consultation. The DEIS merely lists the seven government-to-government consultation meetings which took place, one of which was in Anchorage. ⁶ It is concerning that only seven government-to-government meetings took place for an oil and gas leasing program that will significantly and permanently impact the way of life for communities across a broad geographic area. Moreover, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings. This is egregious, particularly in light of the fact that Canadian users account for the vast majority - in the past up to 85 percent - of the harvest of the Porcupine Caribou Herd.	See Table C.4. Government-to-government consultations were held with multiple tribal governments in several instances at the locations requested. The DOI has conducted consultation with the IPCB and with Canadian officials.
6.	Peter	Stern	—	69296	8	G2G Consultation	Page I-5 section 1.9 identifies the existence of the International Porcupine Caribou Herd Board and its' treaty based role in advising on issues affecting the herd. Virtually nowhere else in this EIS is this board mentioned for any decision making or consulting. My conclusion is this board is being ignored and excluded from the decision making processes to ensure the Canadian govt has no official standing in this EIS or any proposed govt to govt roles in decision making on waivers.	The EIS gives due consideration to the IPCA and ANILCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.
7.	Rosa	Brown	Vuntut Gwitchin Government	74326	8	G2G Consultation	The Bureau of Land Management failed to transparently initiate international consultation, coordination or cooperation on the proposed Coastal Plain Oil and Gas Leasing Program in accordance with the terms of the Agreement on the Conservation of the Porcupine Caribou Herd between the US and Canada (Vol 1 draft EIS p. 1-5).	The EIS gives due consideration to the IPCA and ANILCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Rosa	Brown	Vuntut Gwitchin Government	74326	10	G2G Consultation	Transboundary Impacts The draft EIS states "when evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, to the Porcupine Caribou Herd, its habitats and affected users of Porcupine Caribou," however, the draft EIS fails to consider or analyze the potential impacts of oil and gas development on the heritage values, subsistence harvest and spiritual well-being of Vuntut Gwitchin and other Canadian user groups. [F]ederal agencies should use the scoping process to identify those actions that may have transboundary environmental effects and determine at that point their information needs, if any, for such analyses. Agencies should be particularly alert to actions that may affect migratory species, air quality, watersheds, and other components of the natural ecosystem that cross borders, as well as to interrelated social and economic effects.16 Council on Environmental Quality regarding the National Environmental Policy Act	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
9.	Matt	Krogh	Stand.earth	83321	11	G2G Consultation	We are concerned about the lack of inclusion of scoping comments from Canadian governments including the Vuntut Gwitchin Government in Old Crow, Northwest Territories Government in Yellowknife, Tr'ondek Hwechi'in Government in Dawson City, Government of Yukon in Whitehorse, and the national Canadian Government in Ottawa, and fish and wildlife agencies including the Inuvialuit Game Council, Wildlife Management Advisory Councils for North Slope and Northwest Territories, and the Fisheries Joint Management Committee.	The BLM considered all scoping comments in the development of the Draft EIS, including those submitted from Canadian governments and tribes.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Matt	Krogh	Stand.earth	83321	12	G2G Consultation	The United States has the following five agreements with Canada as it relates to migratory species: -1916 Convention for the Protection of Migratory Birds in the United States and Canada? -1973 Agreement on the Conservation of Polar Bears? -1987 Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd? -1988 Inuvialuit Inupiat Polar Bear management Agreement in the Southern Beaufort Sea? and -2008 Memorandum of Understanding between the Environment and Climate Change Canada and the United States Department of the Interior for the Conservation and Management of Shared Polar Bear Population. BLM ignores the agreements on migratory birds and polar bears, while merely mentioning the 1987 Porcupine caribou agreement. This is inexcusable, as BLM was reminded of these agreements in scoping comments from the Canadian government.	These and all other applicable treaties have been considered.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Matt	Krogh	Stand.earth	83321	13	G2G Consultation	The Canadian governments and First Nations ask that the DEIS look at the transboundary effects of an oil and gas program, as required by 1005 of the Alaska National Interest Lands Conservation Act (ANILCA). The DEIS also fails to adequately analyze the transboundary impacts of oil and gas activity in the Coastal Plain. This includes the impact on migratory wildlife species like Porcupine caribou, local economy of the adjacent Yukon territory, and subsistence hunting of First Nations in Canada. Here are some highlights from Canadian concerns that may have been missed: -Canada is concerned about the potential transboundary impacts of oil and gas exploration and development planned for the Arctic National Wildlife Refuge (ANWR) Coastal Plain, including impacts on shared species that migrate between our countries, as well as impacts on our Indigenous peoples, including their customary and traditional use of Porcupine Caribou. Canada is particularly concerned that oil and gas exploration and development (including pre and postlease activities such as seismic and drilling exploration and transportation of oil and gas from the Coastal Plain) will negatively affect the longterm reproductive success of the Porcupine Caribou herd. (Canadian Government) -Oil and gas development in the 1002 lands of ANWR risks adverse environmental and socioeconomic effects that will be felt far beyond the borders of the reserve and will extend across international boundaries. (Government of Yukon)	The study requirements of Section 1005 of ANILCA expired in 1987 with the submittal to Congress of the report required by Section 1002(h). The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Sophie	Minich	Cook Inlet Region, Inc	97926	1	Range of Alternatives	CIRI encourages the BLM to consult with Arctic Slope Regional Corporation (ASRC) and local stakeholders to assess whether Alternative B would benefit from altering lease stipulations related to subsistence resources and environmental considerations related thereto. For example, given ASRC's experience with caribou resources in and around oil and gas development on the North Slope and understanding that caribou provide an important subsistence resource to people in the affected region, CIRI generally encourages the BLM to consider ASRC's comments to the DEIS as they relate to caribou.	The BLM is conducting ANCSA consultation with ASRC for this EIS process.
13.	Brook	Brisson	Trustees for Alaska	98269	14	G2G Consultation	The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. It is unclear which communities have been contacted by BLM for consultation. Though the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain. ²⁸⁴ BLM also recognizes that many other communities, such as Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole. ²⁸⁵ BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users." ²⁸⁶ However, BLM has not meaningfully engaged with all of these potentially affected communities.	Tables C.4 & C.5 of the Final EIS list Native consultations conducted by the DOI/BLM. The DOI also has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Brook	Brisson	Trustees for Alaska	98269	15	G2G Consultation	Tribal governments for every affected community within Alaska and Canada should have been contacted for government-to-government consultation. BLM does not provide a list of the tribal governments that the agency reached out to for purposes of government-to-government consultation. The EIS merely lists the 7 meetings which took place. ²⁸⁷ It is concerning that only 7 government-to-government meetings took place for an oil and gas leasing program that may significantly impact subsistence in 29 different communities. Moreover, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings. This is egregious, particularly in light of the fact that Canadian users account for the vast majority - in the past up to 85 percent - of the harvest of the Porcupine Caribou Herd. ²⁸⁸	Tables C.4 & C.5 of the Final EIS list Native consultations conducted by the DOI/BLM. The DOI has also conducted consultation with the IPCB and with Canadian officials.
15.	Peter	Stern	—	69296	44	G2G Consultation	Page 3-167 the Canadian harvest data supports the very high utilization of the PCH by Canadian natives in the Yukon and NWT with a smaller percentage in Alaska. The importance of the PCH is acknowledged but the Canadians are excluded from any gov't to gov't role in evaluating this document. Strictly a political decision given that the International Porcupine Caribou Board has existed for many years and is supposed to be advisory to the health of the herd.	The EIS gives due consideration to the IPCA and ANILCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Peter	Stern	—	69296	53	G2G Consultation	Page 3-159-160 Subsistence Uses and Resources: Identifies Arctic Village and Venetie as one of 4 villages for primary subsistence study. This statement is important as it reflects why these 2 villages and the Native Village of Venetie Tribal Gov't should be consulted on govt to govt basis when decisions on waivers to operational restrictions are considered by the BLM. Using entities like the Interior Alaska Eastern Region Subsistence Board that have essentially no stake in these areas under consideration for leasing can be seen as nothing more than an attempt to disenfranchise the Gwich'in Nation.	ROP 36 Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36(a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-2 requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.
17.	Peter	Stern	—	69296	55	G2G Consultation	Page 3-169 the discussion about potential impact on Venetie, Arctic Village, other upper Yukon and the Canadian villages should be an important consideration when future NEPA studies and waivers to restrictions on lease use are considered by BLM. This should mandate govt to govt consultation between the BLM and Native Village of Venetie Tribal Gov't, not federal advisory boards with no representation of the most affected people.	ROP 36 Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36(a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-2 requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.
18.	Peter	Stern	—	69296	58	G2G Consultation	Page 3-196 "Federal agencies also are required to give affected communities opportunities to provide input into the environmental review process, including the identification of mitigation measures." The statement should make it clear that consultation on waivers to permits must include the Native Village of Venetie Tribal Gov't involvement.	ROP 36 Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36(a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-2 requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.

S. Public Comments and BLM Responses (Government-to-Government Consultation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Peter	Stern	—	69296	73	G2G Consultation	D-1.1 Explains the creation and role international porcupine caribou herd board. No explanation as to why the board is not used in a consultation or decision making role.	The role of the IPCB is advisory, and they do not have decision-making authority.
20.	Peter	Stern	—	69296	84	G2G Consultation	BLM's exclusion of meeting with the Native Village of Venetie Tribal Gov't (NVVTG) when it comes to permitting and making waiver decisions needs to be corrected. NVVTG needs to be consulting just as the North Slope Borough and the Native Village of Kaktovik. The indirect impacts need the same level of importance as direct impacts when it comes to the PCH.	ROP 36 Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36(a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-2 requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.
21.	Peter	Stern	—	69296	85	G2G Consultation	Use of the Eastern Interior Alaska Regional Subsistence Board for consulting on waiver decision rather than NVVTG needs to be changed. BLM should also use the expertise of the International Porcupine Caribou Board.	ROP 36 Eastern Interior Alaska Subsistence RAC includes Arctic Village and Venetie (see a, b, and d under ROP 36). Where a Gwich'in community is directly affected, ROP 36(a) requires coordination with that community. ROP 39 is specific to subsistence use and access within the Coastal Plain. Footnote 1, Table 2-2 requires coordination with affected parties as appropriate. This also does not replace the BLM's responsibility to conduct government-to-government consultation with affected tribes.
22.	Brook	Brisson	Trustees for Alaska	98270	100	G2G Consultation	In addition to its hasty timeframes, BLM has not coordinated with all affected communities in Alaska to hold public meetings or government-to-government consultation. Further, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings.	The DOI/BLM has conducted Native consultation with all substantially affected communities, in accordance with the DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

S.3.19 Irreversible and Irretrievable Commitments of Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	69211	1	Irreversible and Irretrievable Commitments of Resources	A plan should be prepared that describes the course of action in the event of equipment and infrastructure failures, pipeline ruptures and the immeasurable and irreversible environmental damages caused once this happens.	At the time of a site-specific proposal, the operator would be required to submit a spill response plan.
2.	Peter	Stern	—	69296	67	Irreversible and Irretrievable Commitments of Resources	Pages 3-248 249 Section 3-7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES This section just lists the permanent effects with no discussion on what it means to the PCH and the people who depend on the animals other than to refer back to Sections 3-1 and 3-4. No attempt at a synopsis.	The Final EIS has been revised d to refer the reader to Section 4.11 of the NPR-A EIS (BLM 2012) for a detailed description of irreversible or irretrievable commitments of resources that could occur from the indirect impacts that would occur in the future after leasing.
3.	Richard	Edwards	—	74281	50	Irreversible and Irretrievable Commitments of Resources	The Draft EIS identifies one of the irreversible and irretrievable resource commitments as (page 3-248):"Energy consumption associated with construction and operation phases." In the haste to prepare this document, the irretrievable energy consumption associated with exploration and product transport activities has been omitted. The Draft EIS needs to be revised to identify this resource commitment.	Section 3.7 has been revised in the Final EIS to include exploration and transportation activities related to future oil and gas activities following issuance of a lease.

S. Public Comments and BLM Responses (Irreversible and Irretrievable Commitments of Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Brook	Brisson	Trustees for Alaska	96981	78	Irreversible and Irretrievable Commitments of Resources	An agency is required to fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development."239 An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and irretrievable commitment of resources. 240 In the oil and gas context, this occurs when an agency decides to issue a lease that does not contain an express provision retaining the agency's authority to fully prohibit later activities on those leases.241 Once this critical decision-point is reached, "any vague prior programmatic statements are no longer enough" to satisfy NEPA.242 Here, if BLM is going to make an irretrievable commitment of resources, it cannot defer its site-specific analysis and cannot rely on vague programmatic statements in the draft EIS. [239 Friends of Yosemite Valley, 348 F.3d at 800 (quoting N. Alaska Envtl. Ctr. v. Lujan (NAEC), 961 F.2d 886, 890-91 (9th Cir. 1992)); see also Block, 690 F.2d at 761 ("The standards normally applied to assess an EIS require further refinement when a largely programmatic EIS is reviewed.").]	Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Draft EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Section 3.7 of the Draft EIS identifies irreversible and irretrievable commitments of resources from the indirect impacts that would occur in the future after a lease sale. The site-specific NEPA analysis for a specific proposal would identify the irreversible and irretrievable commitments of resources from that proposal.

S. Public Comments and BLM Responses (Irreversible and Irretrievable Commitments of Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Brook	Brisson	Trustees for Alaska	96981	81	Irreversible and Irretrievable Commitments of Resources	BLM similarly fails to distinguish between what decisions are irreversible or irretrievable at this point in time and instead improperly defers to the IAP for the NPRA. The draft EIS states that a "detailed description of irreversible or irretrievable commitments of resources from oil and gas development on the North Slope is in Section 4.10 of the NPR-A EIS" and includes a bullet list of types of effects that would be irreversible. ²⁴⁷ These are effects of the leasing program as a whole, and fail to distinguish between what becomes irreversible now and what becomes irreversible at later decision points. It is important for the public to understand the effects that would occur solely because of a lease and this specific oil and gas program - as opposed to those that might occur from a potentially different program hundreds of miles away in the NPRA.	Section 3.7 of the Draft EIS identifies irreversible and irretrievable commitments of resources from the indirect impacts that would occur in the future after a lease sale. There would be no direct impacts as a result of leasing; therefore, there would be no irreversible and irretrievable commitments of resources from leasing. The site-specific NEPA analysis for a specific proposal would identify the irreversible and irretrievable commitments of resources from that proposal. The Final EIS has been corrected to refer the reader to Section 4.11 of the NPR-A EIS (BLM 2012) for a detailed description of irreversible or irretrievable commitments of resources that could occur from the indirect impacts that would occur in the future after leasing.
6.	Francis	Mauer	—	97757	4	Irreversible and Irretrievable Commitments of Resources	This section fails to include the irreversible and irretrievable loss of wilderness characteristics that still exist on the Refuge coastal plain. ^[7] Instead it lists the loss of hydrocarbon resources, industrial use of water and certain wildlife values that will be lost due to production of oil and gas. We point out, however, that the 1002 (h) Report to Congress ^[8] correctly stated that: "The wilderness character of the coastal plain would be irretrievably lost" if the coastal plain were opened to oil leasing and development. We recommend that this EIS acknowledge the truth, rather than continue to avoid this important issue. As we have mentioned earlier, the American people deserve to be informed of what will be lost.	Under all alternatives in the EIS, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

S.3.20 Landownership and Use

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Matthew	Rexford	Native Village of Kaktovik	74308	6	Landownership and Use	NVK is concerned about the management of any unleased land in the Coastal Plain. The final EIS should make clear who is responsible for management decisions on those lands. Currently, the FWS, through their CCP, manages land in the Coastal Plain as wilderness, which we find incompatible with the purpose of the Leasing Program - to establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas; however, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although the BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns the BLM the sole responsibility for making such decisions. The USFWS CCP (2015) will be revised to reflect all purposes of the Arctic Refuge within the Coastal Plain, as amended by the Tax Act.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Matthew	Rexford	Kaktovik Iñupiat Corporation	74331	9	Landownership and Use	5. Include local access issues raised by the community of Kaktovik. The Kaktovikmiut have repeatedly raised concerns regarding access issues in the 1002 Area and ANWR. Our access has been so restricted that we are treated as trespassers in a place we have always called home, long before the Federal government assumed management and ownership. In BLM's new management, BLM should work with the local people and FWS on how these restrictions can be peeled back. In the summer months, the residents of Kaktovik can only traverse via boats through the rivers and coast and overland only on private land. Meanwhile, BLM is proposing oil and gas development programs throughout the 1002 Area. It does not make sense that indigenous peoples should be prevented from accessing the same area industry is authorized to explore and develop. Specifically, BLM should work with the Kaktovikmiut and FWS to authorize year-round access in the Coastal Plain by ATVs, year-round access to our Native Allotments in the Refuge, and a mechanism for road access and energy development. Now that the 1002 Area is open for resource development, we feel these access issues should be easily resolved by the Federal government.	As the Arctic Refuge manager, the USFWS is responsible for managing all non-oil and gas-related access throughout federal lands in the Coastal Plain, including for subsistence purposes. BLM ROPs would require oil and gas operators to minimize impacts of their operations on subsistence access. Access to Kaktovik is clarified in the analysis (Section 3.4.1). Private development of roads will be closed to the public but would be made available to private industry and subsistence use.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	2	Landownership and Use	BLM should describe the Native Owned Land in the Coastal Plain and potential impacts to Native Owned Land from Lease Stipulations or ROPS on adjacent Federal acreage ASRC owns 92,000 acres of subsurface in the Coastal Plain, with Kaktovik Iñupiat Corporation owning surface acreage in the Coastal Plain. Beyond our shareholders Native Allotments, ASRC and KIC are the only private land owners in the entire Arctic National Wildlife Refuge. While BLM acknowledges the presence of Native Allotments throughout ANWR, ASRC and KIC's ownership is not mentioned. Although BLM does not manage ASRC's mineral interest and ASRC's lands are outside of the leasing program administered by BLM, ASRC's mineral interest could be impacted by BLM's Lease Stipulations and ROPS if BLM enacts burdensome restrictions or NSOs adjacent to ASRC's lands. BLM must work with the adjacent land owners in their management of the Program Area and when determining restrictions on federal land which may impact Alaska Native landowners.	Language has been added to Section 1.4 of the EIS further describing KIC and ASRC's ownership of lands in and adjoining the program area. The DOI and BLM have been conducting Native consultation with KIC and ASRC to help them better understand potential impacts on Native landowners. Section 1.4 has been edited to specifically identify Native conveyed lands as being owned by KIC (surface) and ASRC (subsurface).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	29	Landownership and Use	The BLM should clarify in the Final EIS a specific plan regarding the dual management framework between the Fish and Wildlife Service and the Bureau of Land Management. VOICE is concerned that a system where the FWS manages unleased land in accordance with the CCP and the BLM manages leased land in accordance with the final EIS will lead to a disjointed management scheme that will affect the local people of Kaktovik and subsistence users primarily.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Arctic Refuge, including both leased and unleased areas; however, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. The BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, as is currently the case in the Kenai National Wildlife Refuge, where the BLM also manages an oil and gas program. The USFWS CCP (2015) will be revised to reflect all purposes of the Arctic Refuge within the Coastal Plain, as amended by the Tax Act.
5.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	31	Landownership and Use	The BLM should also clarify how Right of Ways (ROW) will be approached in the final EIS for both access and pipelines. The Tax Act is very clear in stating, "The Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section." The DEIS has introduced more ambiguous language that could be off-putting to potential lessees. The BLM should update the language to clearly comply with the wording in the Tax Act.	Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way (ROW) or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Thus; ROWs necessary for both access and construction of facilities, such as pipelines, will be granted, including in unleased areas.
6.	—	—	Alaska Department of Natural Resources	94102	67	Landownership and Use	43 Chapter 3.4.1, Social Systems, Page 3-150 Revise analysis - Landownership and Use In Paragraph 4, it is noted that Kaktovik is "one of the largest North Slope communities." In both the NSB census data and ACS 5-year estimates, it is one of the three smallest communities of the eight communities on the North Slope	Revision on Kaktovik size has been included.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Brook	Brisson	Trustees for Alaska	98270	11	Landownership and Use	BLM notes that there may be interest in conveying lands out of federal ownership "to accommodate new community development" and "to support . . . a demand for land uses associated with energy or mineral development."1604 It is unclear what BLM means by this or what authority DOI has to convey lands in the Coastal Plain out of federal ownership. Past legislation has very clearly and specifically provided for land selections by Alaska Native Corporations, and those selections have been made. And in 1988, Congress passed legislation that prohibits land exchanges within the Coastal Plain absent Congressional approval.1605 BLM must explain this and related statements and specifically identify the legal authority it believes it could use to transfer additional federal lands in the Coastal Plain. BLM should also identify what additional lands it thinks may be sought for exchange based on its conclusions and assumptions.	Pursuant to Section 1302(h)(2) of ANILCA, as amended by Section 201 of PL 100-395, other than for lands validly selected under ANCSA prior to July 28, 1987, an act of Congress would be required in order to convey lands in the Coastal Plain out of federal ownership. No particular lands have been identified for such conveyance.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Brook	Brisson	Trustees for Alaska	98270	14	Landownership and Use	BLM has not adequately explained or analyzed the legal status and impacts of oil and gas on ASRC lands. During scoping, Groups asked BLM to explain the legal status of these lands and, if DOI believes that these lands are now open to oil and gas, explain the legal basis for that conclusion as well as account for the impacts to the Coastal Plain from any activities that may take place on the corporation lands. BLM has failed to do so in the draft EIS. ¹⁶¹³ It appears from the draft EIS discussion that BLM believes that all of these lands are now open to oil and gas activities, but BLM also states that land ownership and use is similar to how it was in 2015 as described in the CCP. ¹⁶¹⁴ ASRC lands are clearly and definitively described as being closed to oil and gas activities in the CCP. ¹⁶¹⁵ ASRC lands potentially being open to oil and gas is a major change in private land use that must be clearly addressed in the EIS. BLM must be clear on this point. This means that BLM must also explain how it interprets the application of the stipulations and conditions in the 1983 Agreement and other environmentally protective measures adopted pursuant to this process to apply to these lands in light of the 1983 Agreement. BLM must explain what is open or not, and also explain what activities may proceed or not, and under what restrictions on these lands. BLM should also clearly state that Title XI of ANILCA applies to activities proposed for ASRC lands. To date, BLM has not clearly set these points out. It must do so, as it is a critical piece to understand the full extent of oil and gas activities and potential impacts on the Coastal Plain and its resources.	In opening the Coastal Plain to federal oil and gas leasing and development, the Tax Act also had the effect of removing the 1983 Agreement's prohibition of oil and gas exploration and development on all ASRC lands in the Arctic Refuge. The Leasing EIS is not intended to address ASRC's management of oil and gas exploration and development on its lands. Lease stipulations and ROPs adopted by the BLM will only apply on federal lands within the Coastal Plain. The 1983 Agreement does not govern the BLM's management of its oil and gas program. Lands open for leasing would only occur on USFWS surface lands being analyzed for leasing on BLM-subsurface mineral estate. The legal basis for this is described in the EIS.

S. Public Comments and BLM Responses (Landownership and Use)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Brook	Brisson	Trustees for Alaska	98270	259	Landownership and Use	BLM fails to specifically analyze the impacts of an oil and gas program on the Native allotments. There are over 900 acres of allotments spread across the Coastal Plain, but concentrated primarily along rivers and the coast.1602 Many of these allotments support subsistence activities and uses. Some of the allotments have not been conveyed yet. BLM has not analyzed the impacts of oil and gas development on the use of allotments or the potential to impact selections. It is reasonable that a person may no longer be interested in using a specific area and allotment if that area is highly impacted by oil and gas activities. BLM has also not proposed any measures to protect these allotments, like a buffer or seasonal restrictions that are specific to the allotments. Relatedly, BLM's characterization of the NSO provision as providing protections for private lands is also questionable, as the NSO provision only prohibits permanent oil and gas infrastructure, but not significant other activities like exploration, it does not appear to apply to all areas where there are allotments, and BLM can grant waivers to allow pipelines and roads to cross rivers	New Lease Stipulation 11 would prohibit the construction of facilities on Native allotments unless the owner provided written consent. Additional language has been added to further describe impacts on Native allotments.
10.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	32	Landownership and Use	If BLM's assertion in the draft EIS is that it retains the authority to later say no to projects, BLM needs to clarify in the draft EIS and any proposed lease terms so it is absolutely clear that a lease does not grant the right to conduct any future activities and that BLM retains the authority to fully prohibit any later proposals.	The issuance of a lease does not in and of itself authorize any on-the-ground activity. Although leases include the right to explore and develop the oil and gas resources therein, such activities are subject to BLM authorization and reasonable terms and conditions.

S.3.21 Marine Mammals

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Karina	Marzban	—	18201	3	Marine Mammals	The EIS must address how oil leasing would impact polar bears and all other wildlife species of the coastal plain, as well as the full spectrum of ecological consequences over the multi-decade life span of oil operations.	Section 3.3.5 describes the likely environmental consequences of leasing on polar bears and other marine mammals. Sections 3.3.3 and 3.3.4 address impacts on birds and terrestrial mammals, respectively.
2.	Craig	Mishler	—	31305	4	Marine Mammals	The draft EIS fails to provide details on how many bears could be harmed or how it will prevent or reduce injury and death.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
3.	Withheld	Withheld	—	48698	2	Marine Mammals	This document contains insufficient analysis of impacts on polar bear survival, natality, movement, and mortality	These aspects of demography and ecology were described in Draft EIS Section 3.3.5, pages 3-124 to 3-126, 3-132 to 3-133, 3-136 to 3-138, and 3-140 to 3-142. Some additional clarifying text has been added in response to other, specific comments.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	55209	4	Marine Mammals	The draft EIS acknowledges that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat.” (Vol 1, p. 3-142) However, the EIS gives no estimate of the number of bears that could be killed, injured or displaced by the leasing process or seismic testing.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J of the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
5.	Withheld	Withheld	—	55252	5	Marine Mammals	Impacts on Polar Bears are Inadequately Addressed. Undeniably, the Coastal Plain of the Arctic National Wildlife Refuge is very critical habitat for polar bears, and is of increasing importance to the survival of the Southern Beaufort Sea subpopulation given the melting Arctic ice cap. Not only do polar bears need to den on the Arctic National Wildlife Refuge Coastal Plain, they need to successfully swim between the land and the ice. This latter need is not sufficiently described and discussed, including the impacts of all of the oil and gas activities thereon. When do they swim? How often? Where? This has to be fully discussed. Also, what is the impact of oil and gas development on young, newly emerged polar bear cubs? This needs to be described.	Movements and habitat use of polar bears are described in Draft EIS Section 3.3.5, pages 3-125 to 3-126 and 3-131 to 3-132, including increased swimming in response to sea-ice decline. Activities are prohibited within 1 mile of occupied maternal dens to minimize disturbance. Marine impacts of oil and gas activities on swimming bears would be limited to infrequent seasonal passage of support vessels in the open-water season and to the possibility of fuel spills. Potential effects of development activities on female bears and cubs following emergence from dens are discussed on pages 3-137 and 3-138.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Kathryn	Tilly	—	55683	1	Marine Mammals	the draft EIS inadequately describes how to mitigate damage to the population of polar bears in the region	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
7.	Thomas	Turiano	—	56599	6	Marine Mammals	6. Needs a more thorough analysis of the effects on polar bears.	Additional text has been inserted into the Final EIS to provide more details in response to other, specific comments.
8.	John Paul	Rodriquez	IUCN	67497	1	Marine Mammals	Based on previous observations of polar bear responses to such activities, the proposed seismic survey could disturb over 96 percent of undetected denning bears on the Coastal Plain. In addition, there is a 23 percent probability that heavy vehicles could drive right over one or more dens with fatal consequences for mother polar bears and cubs.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). This programmatic EIS analyzes leasing in the program area and the general types of impacts that may result from that leasing. The impacts likely to result from specific activities that follow leasing, such as seismic exploration, drilling, and development, will be analyzed separately in future NEPA documents focused on those proposed activities. The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Withheld	Withheld	—	67539	2	Marine Mammals	77% of the coastal plain is critical Habitat for polar bears, which are protected under the endangered species act. The draft eis acknowledges this but does nothing to mitigate or prevent injury/death of the polar bears.	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Jenny	Rowland-Shea	Center for American Progress	67555	2	Marine Mammals	The DEIS tellingly fails to include an estimate of how many polar bears could be killed, injured, or displaced by drilling in the Arctic Refuge, but it does acknowledge that “the potential for injury or mortality could be high when developing new oil and gas projects.” More than 77 percent of the coastal plain—the area of the refuge under consideration for leasing—serves as critical denning habitat for polar bears, with a concentration of maternal dens in areas the DEIS identifies as having high oil and gas potential. The DEIS suggests that infrared cameras are an “effective means of locating dens” in order to avoid disturbance. Independent polar bear experts note, however, that this method of locating dens is very unreliable and that surveyors could miss up to 50 percent of dens due to poor weather conditions, hilly terrain, snow depth, and failure of industry to apply best practices—errors that could result in deaths of or injuries to polar bears.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected. Airborne FLIR is one technique that has been used to detect maternal dens; additional discussion of den detection techniques and detectability has been added to the Final EIS. Current ITRs in effect to the west of the program area describe a suite of proactive and reactive measures that have been applied to petroleum activities to detect and minimize disturbance to polar bear dens. The BLM anticipates that any future mitigation measures applied in the program area will be similar and will help to reduce impacts of petroleum activities on polar bears.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Withheld	Withheld	—	67588	2	Marine Mammals	The DEIS fails to fully account for the effects of even the initial exploratory geophysical research, which will adversely affect endangered polar bears.	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
12.	Withheld	Withheld	—	68965	85	Marine Mammals	57. Chapter 3; section 3.3.5, page 3-137. Marine Mammals. The potential effects of behavioral disturbance are likely to be negligible on the SBS population. Please provide some supportive rationale for this conclusion and an explanation of how disturbance effects from the program can be considered at the population scale. Similarly, Behavioral disturbance on the productivity of polar bears in the program area is likely to be low. Please clarify and provide some supportive rationale for this conclusion.	Four USFWS citations (2006, 2008b, 2009; 81 FR 52276) were cited as sources for the statements on Draft EIS pages 3-137 and 3-138 regarding the likelihood of negligible impacts from short-term behavioral disturbance of individual bears. This conclusion was based on USFWS evaluation of the impacts of activities conducted under the ITRs currently in effect in areas of existing oil field development west of the program area.
13.	Mark	Alessi	—	69302	3	Marine Mammals	Measures must be taken to ensure that the dwindling Polar Bear Population of the Southern Beaufort Sea is not further threatened by oil drilling operations, including steps to ensure that seismic work does not harm the snow dens of mothers and cubs.	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
14.	Linda	Serret	—	69357	11	Marine Mammals	It seems that a project occurring in polar bear coastal denning and feeding habitat, combined with other projects in the area and climate change, would jeopardize their continued existence and hasten its path to extinction; already projected to occur in our lifetime without the project.	Effects on polar bears and other marine mammals were discussed in Section 3.3.5, pages 3-148 and 3-149. Additional text has been inserted in the Final EIS to provide more details in response to other, specific comments.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Becky	Long	—	69710	22	Marine Mammals	DEIS has Inadequate Analysis of Polar Bear Impacts. All of the Action alternatives affect large areas of the critical habitat of the South Beaufort Sea polar bear population. Critical denning habitat makes up 77% of the program area especially in the hydro carbon potential zones. With climate change impacts, the coastal plain will even be more important as habitat as changes intensify. There are no estimates of the number of bears that could be killed, injured or displaced by the leasing program and the seismic testing that happens beforehand. Human and bear conflicts will escalate. If the leasees do locate bear dens, will they actually change the drilling area?	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
16.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	11	Marine Mammals	Polar bear critical denning habitat constitutes 77% of the program. All alternatives must continue “to conserve fish and wildlife populations and habitats in their natural diversity” as well as “fulfill the international fish and wildlife treaty obligations of the United States.” While the DEIS acknowledges that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat,” an estimate is needed of the number of bears that could be killed, injured or displaced by the leasing process and seismic testing; further, thermal testing cannot be used as a method of locating dens, because experts in the field concur that it is highly inaccurate.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

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17.	Withheld	Withheld	—	72125	44	Marine Mammals	Marine Mammals Comments (Section 3.3): The DEIS lists many of the effects of providing for an oil and gas program as described for the action alternatives; however, the discussion fails to recognize the fundamental role of protecting Critical Habitat. Critical Habitat contains the physical or biological features that are essential to the conservation of the species. Given that the refuge is the most important onshore denning habitat in the United States and that exploration and/or drilling in the refuge would negatively impact this segment of the Beaufort Sea population, any action that authorizes exploration or drilling would result in a violation by the United States of the Agreement. Polar bears in other regions are under serious threat from the effects of poisons and pollutants or from the effects of global warming. These threats could also seriously impact the Southern Beaufort Sea population and the best means of protecting the population is through habitat protection. Furthermore, the Special Rule for the polar bear states, "a federal agency would have to specifically consider whether a Federal action that produces Green House Gas () emissions is a "may affect" action that requires consultation under section 7 of the ESA with regard to any and all species that may be impacted by climate change... The Service recognizes that the biggest long-term threat to polar bears is the loss of sea ice habitat from climate change. While emissions are clearly contributing to that climate change, comprehensive authority to regulate those emissions is not found in the ESA. The challenge posed by climate change and its ultimate solution is much broader. Rising to that challenge, Federal and State governments, industry, and nonprofit organizations are exploring ways to collectively reduce emissions as we continue to meet our nation's energy	Critical habitat was described in its own section of the polar bear Affected Environment, and specific details of the size of the three designated CH units were provided under Impacts Common to All Alternatives. Additional acreage details have been added to the Final EIS, and the discussion of climate change has been expanded. The projected incremental contribution of program-related development to GHG emissions was described in Draft EIS Section 3.2.1.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	needs." (78 FR 11785). Development of yet another oil field would further set back efforts to limit the carbon emissions that are fueling the dramatic changes in climate that is now affecting Alaska. Polar bears—listed as "threatened" under the Endangered Species Act—are already struggling with deteriorating sea ice and increasingly are forced to den on land on the eastern Beaufort Sea coast, including the Coastal Plain of the Arctic Refuge. Three-fourths of the refuge coastal plain is designated as critical habitat for polar bears, which are highly vulnerable to disturbance due to oil and gas activities. Degradation of polar bear habitat is inconsistent with a major purpose of the refuge and the need to protect critical habitat. The impacts of the proposed action may adversely affect polar bears that utilize the Arctic Refuge and Beaufort Sea. Oil and gas development on the Arctic Refuge is incompatible with conserving fish and wildlife populations and habitats in their natural diversity, including protecting polar bear populations and critical denning habitat. The Federal government has known for decades that carbon dioxide pollution is causing catastrophic climate change and that massive emission reductions are needed. The proposed project provides an opportunity for the Fish and Wildlife Service and Bureau of Land Management, without needing comprehensive authority in the ESA, to limit the emissions effects of the proposed action by greatly limiting the scope and scale of the development proposal.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Withheld	Withheld	—	72234	3	Marine Mammals	It is well documented the importance of the ANWR coastal plain for the denning and habitat for polar bears. The DEIS acknowledges that "the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat." There is no estimate of the number of bears that could be killed, injured or displaced by the leasing process or seismic testing. There is also a lack of data on population dynamics of the polar bears in this subgroups of the bears.	The Draft EIS analysis was based on the best available data (as cited in Draft EIS Section 3.3.5, pages 3-124 and 3-125) regarding population dynamics of the SBS stock of polar bears. Please also see responses to letter 79893, comment 18; letter 81368, comments 32, 33, and 42; and letter 81184, comment 4.
19.	Richard	Edwards	—	74281	30	Marine Mammals	The Draft EIS identifies that all action alternatives would affect large areas of the Coastal Plain designated as Critical Habitat for the Southern Beaufort Sea stock of polar bears (only 900 SBS polar bears remaining). The Coastal Plain is identified as the "core activity area" for this Threatened sub-population. The Draft acknowledges that "the potential for injury or mortality of bears could be high when developing new oil and gas projects." The Draft fails to estimate how many polar bears would be killed, injured or displaced by exploration and development in the Coastal Plain. This level of analysis is unacceptable for the Responsible Official to adequately understand the potential impacts on the Threatened SBS stock, especially given that the population has declined by 50% over the last three decades.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

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20.	Richard	Edwards	—	74281	31	Marine Mammals	The Draft EIS basically concludes that avoidance, hazing and den location (using FUR technology that is only 50% reliable) will be adequate to mitigate the impacts of exploration and development activities on the SBS stock. The Draft acknowledges that interactions will increase as the development footprint increases at the same time as SBS bears are forced to spend an ever increasing amount of time on land. Indeed, on page 3-249, the Draft EIS acknowledges that the proposed activity will result in irreversible and irremediable "Loss or abandonment of wildlife habitat." With more than 77% of the Coastal Plain identified as critical denning habitat and maternal dens concentrated in the area of highest gas/oil potential---Where is the detailed quantitative analysis of this cascade of negative effects over time?	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
21.	Richard	Edwards	—	74281	32	Marine Mammals	The Draft EIS must be revised to better address the potential impacts of proposed exploration and development on the SBS stock in quantitative terms.	Please see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. In addition, when promulgated, future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. Further, the EIS states that approximately 20 dens could occur annually in the program area and could be affected.

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22.	Sherry	Lewis	—	74288	3	Marine Mammals	Polar bears are spending summers in the land in the Refuge now. How will they be managed.	The primary method of managing polar bears, which are protected under both the MMPA and ESA, is to manage human activities and facilities to minimize effects on the bears. The mechanisms for such management are specified by the USFWS under ITRs that require a determination of negligible impacts on the SBS stock and no unmitigable adverse effects on Alaska Native subsistence. New ITRs for the program area are currently being developed and will be published in the Federal Register for public review and comment. Further information can be found in USFWS's 2016 Polar Bear Conservation Management Plan (available online).
23.	Lisa	Baraff	Northern Alaska Environmental Center	74306	32	Marine Mammals	All of the action alternatives would affect large areas of polar bear critical habitat. There are currently just 900 Southern Beaufort Sea polar bears, and the population has declined approximately 50% in the last 30 years (Vol. 1, p. 3-125). The use of land in the Coastal Plain for denning and as summer refuge for polar bears in the region has and will continue to increase with the loss of sea ice, pushing more and more polar bears to require the Refuge for survival. Polar bear critical denning habitat constitutes 77% of the program area (Vol. 1, p. 3-133) and maternal dens are disproportionately high in high hydrocarbon potential zones (Vol. 1, p. 3-134). The DEIS acknowledges that "the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat." (Vol. 1, p. 3-142) Nevertheless, there is no estimate of the number of bears that could be killed, injured or displaced by the leasing process or seismic testing.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

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24.	Joseph	Randsell-Green	—	74317	2	Marine Mammals	Oil leasing and drilling would also cause significant disturbance to polar bears. Seventy-seven percent of the program area is critical denning habitat for “threatened” polar bears. Your DEIS states that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat.”. This high mortality must be addressed, especially since polar bears are on the Endangered Species list and because the Southern Beaufort Sea polar bear population has declined by 30% in the last 50 years.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
25.	Allen E.	Smith	—	74324	7	Marine Mammals	While acknowledging that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat - the DEIS fails to fully identify impacts and analyze mitigation measures that are sufficient to protect the future of the polar bears in their threatened species status.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

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26.	Eric	Walsh	Government of Canada	74346	46	Marine Mammals	throughout the dEIS, incidental take regulations (ITRs) are referred to as an important measure in mitigating the impacts of exploration and oil and gas development. However, we note that the Arctic National Wildlife Refuge is currently not covered under the current ITR for the Beaufort Sea (81 Fed. Reg. 52276 (Aug. 5, 2016). Ensuring that ITR are in place will be critical for the protection of denning female bears and their young as well as for mitigating potential human polar bear conflicts that may result in removal of bears from the southern Beaufort Sea polar bear population.	Correct. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
27.	Eric	Walsh	Government of Canada	74346	47	Marine Mammals	The dEIS however does not assess the effectiveness of denning surveys as a mitigative measure to avoid den abandonment or potential mortality to denning females and their young. This represents the most vulnerable life history stage for polar bears and likely the greatest risk of mortality as a result of development activities.	Additional text has been added in the Final EIS to expand the discussion of den detection techniques and detectability of dens using airborne FLIR. The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Withheld	Withheld	—	75137	7	Marine Mammals	The DEIS acknowledged that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
29.	Withheld	Withheld	—	75145	5	Marine Mammals	However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	DJ	Schubert	Animal Welfare Institute	75588	19	Marine Mammals	Oil and gas development in the Coastal Plain is likely to negatively impact polar bears. One important impact that polar bears face from oil and gas development in the Coastal Plain is disturbance of their denning sites. Only approximately 25,000 polar bears exist today, 28 and roughly 50 bears come into the Arctic Refuge each year in September, with denning beginning in the late fall. These bears are part of the Southern Beaufort Sea population, which numbers about 900 animals. 29 According to the Fish and Wildlife Service, which tracks collared polar bears, "collared bears are a subset of the total number of bears that use this area. Tracking of the collared bears identified 53 dens along the mainland coast, 26 (50%) of which were within the bounds of the Arctic National Wildlife Refuge. Twenty-two of the 53 dens (42%) were within the bounds of the 1002 area." 30 Polar bears give birth during mid-winter in deep dens of ice and snow. The Coastal Plain hosts the highest of polar bear dens in Alaska, and is a critical site for polar bears to make their dens and give birth. 31 As climate change shrinks sea ice, biologists anticipate that even more bears will be forced to build their snow dens onshore, making the Coastal Plain even more vital in the future. 32 Denning polar bears subjected to human disturbances may abandon dens before their young can survive an Arctic winter. 33 This, in turn, can adversely affect their winter survival and could increase risks to humans due to a potential increase in polar bear/human conflicts by polar bears who abandon their dens.	Section 3.3.5 of the Draft EIS discussed all of the points raised by the commenter, using the best available data and citing supporting documents.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	DJ	Schubert	Animal Welfare Institute	75588	21	Marine Mammals	Oil and gas development in the Coastal Plain is likely to negatively impact whales in the form of increased risk of vessel strikes and increased ocean noise from vessel traffic and exploration and development activities. Oil and gas exploration requires the use of seismic surveys, which use a controlled sound source, such as an airgun, to transmit sound waves to the ocean floor. 36 Oil and gas development based on these surveys involves exploratory drilling and the construction of platforms and transport systems, which all emit noise, increase vessel and air traffic, and heighten the risk of oil spills. 37	The proposed lease sales would be terrestrial, with only limited seismic activity or exploratory drilling potentially occurring in the marine environment under Lease Stipulation 4. Other construction activity and noise sources associated with marine activities (e.g., barge landings, ship traffic) are discussed in Section 3.3.5 of the Draft EIS.
32.	DJ	Schubert	Animal Welfare Institute	75588	24	Marine Mammals	The health of seal populations is of great importance to the health of polar bear populations, as seals are the primary prey source of polar bears. 39 As marine mammals, oil and gas exploration and development influence seals in ways that are similar to the impact on whales, which is described above. Seals also experience additional impacts from terrestrial oil and gas activities. These terrestrial activities can negatively impact breeding, pupping, molting, and basking.	The proposed lease sales would be terrestrial, with only limited seismic activity or exploratory drilling potentially occurring in the marine environment under Lease Stipulation 4. Other construction activity and noise sources associated with marine activities (e.g., barge landings, ship traffic) are discussed in Section 3.3.5 of the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Withheld	Withheld	—	75705	2	Marine Mammals	The DEIS acknowledged that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species. Let's do our part to HELP the polar bears survive, rather than contribute to their demise.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
34.	Chandra	Turner	Inuvialuit Game Council	75902	31	Marine Mammals	Map 3-24 in Appendix A is incorrectly sourced. This map appears to be a combination of Figures 4 and 5 from the USFWS (2018) summary of research on the coastal plain of ANWR. The stars in this map are mislabeled - they are actual polar bear dens as discovered using VHF collars, from 1982-2010. The yellow lines in the map are the estimate of suitable polar bear denning habitat from Durner 2006.	The map has been revised accordingly for the Final EIS and the sources cited correctly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Chandra	Turner	Inuvialuit Game Council	75902	32	Marine Mammals	USFWS (2018) includes a map of fall polar bear distribution from 2010-2013, which was originally published in Atwood et al. (2016). This map was not included in the DEIS but should have been, as it helps illustrate what polar bear habitat use may look like during the project activities. This is an omission.	The paper by Atwood et al. (2016) was cited in Section 3.3.5, Affected Environment, Polar Bear, Population Movements, along with other publications that describe the coastal distribution of polar bears in fall and the changes that have been observed in recent decades. Reproducing a map showing that coastal distribution will not add substantially more information.
36.	Chandra	Turner	Inuvialuit Game Council	75902	34	Marine Mammals	In climate change - marine mammals (starting on p. 3-131), increased onshore denning is not listed as a major behavioural change for polar bears resulting from declining sea ice cover. This is an omission.	The referenced information was not omitted. It is described on preceding pages in the Maternal Denning subsection of Section 3.3.5, as well as in the second paragraph following the bullet list on page 3-132 of the Draft EIS. Additional text has also been added to Section 3.3.5.
37.	Chandra	Turner	Inuvialuit Game Council	75902	35	Marine Mammals	In polar bear - critical habitat (p. 3-127), it is not mentioned that 77% of the project area falls within polar bear denning critical habitat (it is later mentioned in the maternal denning section). This is an omission.	The referenced information was not omitted. The Critical Habitat subsection of Section 3.3.5 presented a general description of the three habitat units, whereas the Maternal Denning subsection presented the relevant detail on the percentage of the program area in the terrestrial denning unit of critical habitat.

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38.	Chandra	Turner	Inuvialuit Game Council	75902	36	Marine Mammals	P. 3-131 in climate changes states that "The ongoing declines in the extent and duration of sea-ice cover present the greatest source for possible population-level impacts on marine mammals over the next 20 years, although the impacts are not entirely clear." o The USFWS (2018) report concludes that "Collectively, these results suggest that the use of land by polar bears as summer refugia and for denning in winter will likely continue to increase with additional loss of sea ice. Although the effects that increased land use may have on nutrition, energetics, and reproduction are not fully understood, it is worth noting that the Southern Beaufort Sea subpopulation of polar bears has experienced a recent decline in abundance (Bromaghin and others, 2015)." o The DEIS lacks this level of detail and specificity. The DEIS should be corrected to provide further detail on projected changes in the Southern Beaufort Sea polar bear population and how the project activities may affect or exacerbate these changes.	The first sentence quoted in the comment refers to marine mammals in general (rather than polar bears in particular), noting that likely effects vary among species. The preceding and subsequent parts of Section 3.3.5 pertaining to polar bears describe in detail the population status of the SBS stock and the current and likely effects of climate change on their habitats, behavior, and demography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Chandra	Turner	Inuvialuit Game Council	75904	20	Marine Mammals	Furthermore, the cumulative impacts section of the DEIS, starting at p. 3-148 does not adequately or appropriately consider cumulative impacts to polar bears. This is especially important, given that, as described in the DEIS, the Southern Beaufort Sea (SBS) polar bear population has experienced a population decline, the region is experiencing rapid sea ice loss and bears are spending much more time on land (p. 3-132 para 4-5), the population has lower body condition ratings than the adjacent Chukchi sea population (p. 3-132 para 4), the 1002 lands is an important terrestrial maternal denning area for SBS polar bears (p. 3-128 para 3), the "high hydrocarbon potential" (HCP) area of the 1002 lands overlaps with the highest use maternal denning area for SBS bears (p. 3-134 para 2), and that due to concerns over climate change impacts to sea ice, and thus polar bear populations, polar bears are listed under the Endangered Species Act as Threatened (p. 3-124 para 3) and 77% of the project area is critical habitat for denning (p. 3-128, para 2). To fail to address cumulative impacts to these animals while acknowledging this litany of discrete threats underscores the inadequacy of the DEIS in its treatment of cumulative impacts throughout.	The referenced subsection of the Draft EIS (pages 3-148 and 3-149) described and discussed such effects. The wording of the final paragraph has been revised to clarify the likelihood and magnitude of program impacts interacting with climate change effects on polar bears.
40.	Chandra	Turner	Inuvialuit Game Council	75904	39	Marine Mammals	We have noted the following errors and omissions from the DEIS concerning polar bear: · Map 3-24 in Appendix A is incorrectly sourced. This map appears to be a combination of Figures 4 and 5 from the USFWS (2018) summary of research on the coastal plain of ANWR. The stars in this map are mislabeled - they are actual polar bear dens as discovered using VHF collars, from 1982-2010. The yellow lines in the map are the estimate of suitable polar bear denning habitat from Durner 2006	The map has been revised accordingly for the Final EIS and the sources cited correctly.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Chandra	Turner	Inuvialuit Game Council	75904	42	Marine Mammals	· In climate change- marine mammals (starting on p. 3-131), increased onshore denning is not listed as a major behavioural change for polar bears resulting from declining sea ice cover. This is an omission.	The referenced information was not omitted. It is described on preceding pages in the Maternal Denning subsection of Section 3.3.5, as well as in the second paragraph following the bullet list on page 3-132 of the Draft EIS. Additional text has also been added.
42.	Chandra	Turner	Inuvialuit Game Council	75904	43	Marine Mammals	· In polar bear - critical habitat (p. 3-127), it is not mentioned that 77% of the project area falls within polar bear denning critical habitat (it is later mentioned in the maternal denning section). This is an omission.	The referenced information was not omitted. The Critical Habitat subsection of Section 3.3.5 presented a general description of the three habitat units, whereas the Maternal Denning subsection presented the relevant detail on the percentage of the program area in the terrestrial denning unit of critical habitat.
43.	Chandra	Turner	Inuvialuit Game Council	75904	44	Marine Mammals	· P. 3-131 in climate changes states that "The ongoing declines in the extent and duration of sea-ice cover present the greatest source for possible population-level impacts on marine mammals over the next 20 years, although the impacts are not entirely clear." o The USFWS (2018) report concludes that "Collectively, these results suggest that the use of land by polar bears as summer refugia and for denning in winter will likely continue to increase with additional loss of sea ice. Although the effects that increased land use may have on nutrition, energetics, and reproduction are not fully understood, it is worth noting that the Southern Beaufort Sea subpopulation of polar bears has experienced a recent decline in abundance (Bromaghin and others, 2015)." o The DEIS lacks this level of detail and specificity. The DEIS should be corrected to provide further detail on projected changes in the Southern Beaufort Sea polar bear population and how the project activities may affect or exacerbate these changes.	The first sentence quoted in the comment refers to marine mammals in general (rather than polar bears in particular), noting that likely effects vary among species. The preceding and subsequent parts of Section 3.3.5 pertaining to polar bears describe in detail the population status of the SBS stock and the current and likely effects of climate change on their habitats, behavior, and demography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	Chandra	Turner	Inuvialuit Game Council	75904	46	Marine Mammals	All. 2 List of omitted resources relevant to the DEIS deficiencies discussed in this submission Polar bear: McKinney, M., Atwood, T.C., Iverson, S.J., and Peacock, E., 2017, Onshore food subsidies add complexity to the response of Alaska polar bears to climate change: Ecosphere, v. 8, p. e0.633, doi:10.1002/ecs2.1633. This omitted reference is important because it describes the drivers behind polar bear distribution while on shore, which is relevant for the DEIS.	Text (citing McKinney et al. 2017) has been added to 4th paragraph on page 3-126 and to 5th paragraph on page 3-132 stating that polar bears using terrestrial habitats near the program area showed increased use of bowhead whale in their diets in recent years, indicating increased foraging on the Kaktovik whale-bone pile.
45.	Withheld	Withheld	—	77891	3	Marine Mammals	The DEIS acknowledged that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Withheld	Withheld	—	79888	8	Marine Mammals	theDEIS acknowledged its own proposed action alternatives could cause injury or death to polar bears and would affect large areas of polar bears' Critical Habitat. However, BLM failed to identify and analyze sufficient mitigation measures to protect the bears nor did it identify how many bears could be impacted or how impacts would affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	18	Marine Mammals	the DEIS estimates annual maternal denning in the program area to be approximately 19 dens, citing a phone conversation with a FWS biologist. 86 This referenced estimate cannot be found in published data, nor does it appear to be related to any specific denning study or combination of studies. Instead, the DEIS says this estimate is based on various other estimates including "[1] the estimated population of the [Southern Beaufort Sea] stock, [2] the proportion of adult females in the population, [3] the breeding probability of adult females, [4] the proportion of dens on land, and [5] the proportion of historical dens in the program area" 87 The DEIS does not indicate what each of these numbers is, and does not cite to supporting data, modeling, or other sources, making it impossible for the Associations to determine whether these estimates are accurate or whether there are errors in these numbers that are compounded through the application of these five separate estimates to reach an approximate annual denning number for the program area. Given the number of maternal dens that have been documented in the program area over approximately 40 years, 88 the DEIS's annual denning estimate should be subject to some skepticism. The FEIS should include a maternal denning estimate that is based on the best available scientific information and should clearly and transparently identify the sources of that information.	Comment noted. The referenced estimate by USFWS biologist Ryan Wilson has been added to Appendix J, describing the computational procedure and citing supporting data sources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	19	Marine Mammals	the DEIS states that there are “[a] few records” of female polar bears denning successfully near oilfield infrastructure since the beginning of development along the central Beaufort Sea coast. 89 The DEIS later concludes that construction of ice and gravel roads, pads, 85 See Cronin Testimony, supra note 82. 86 DEIS at 3-128 & n.27. 87 Id. at 3-128. 88 Id. 89 Id. Ms. Nicole Hayes March 13, 2019 Page 27 of 36 27 99959215.12 0078439-00052 and pipelines may cause temporary loss of suitable denning habitat. 90 However, industry monitoring reports required under MMPA letters of authorization indicate that between five and 10 instances of the successful emergence of a sow and cub(s) have been recorded on or around oilfield infrastructure in just the past 10 years. 91 On one gravel pad that is no longer in use, there is typically one den recorded per year. 92 The FEIS should incorporate data showing that maternal denning occurs near oilfield infrastructure and activity in greater numbers than is reflected in the DEIS and that implementation of established avoidance and mitigation measures means that construction of program infrastructure is not likely to significantly impact maternal denning.	Corroboration of “between 5 and 10 instances” of successful dens on or around infrastructure is not readily available, but more specific text has been inserted from the current ITR final rule (81 FR 52276), stating that several females have denned successfully in the existing oil fields where industry activities occurred as near as 50–100 m from occupied dens, whereas several other females abandoned dens where activities occurred at distances of 100–500 m.
49.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	20	Marine Mammals	the DEIS incorrectly states that polar bears could be susceptible to vehicle strikes. 93 In fact, there is no known instance of an oil and gas industry vehicle striking a polar bear in the over 40 years of development on the North Slope.	Draft EIS statement is accurate as written. Vehicle strike is a risk for polar bears moving across roads while in transit between the ocean and onshore denning areas, but it has low probability and the impact was identified on page 3-141 as being negligible. The density of terrestrial dens in the program area is substantially greater than in the oil fields farther west and the occurrence of polar bears onshore is increasing as sea ice diminishes, so the risk is likely to be higher in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	21	Marine Mammals	the DEIS incorrectly describes industry practice when polar bears move through areas near industrial facilities, stating that bears "would likely be disturbed by activities on, or be hazed away from, drill-site pads." 94 This is not industry practice and does not reflect standard industry training. Rather, under typical conditions, bears are allowed to cross roads, pads, and other infrastructure without disturbance. A bear will generally be deterred back to the tundra or ice only if it endangers workers or attempts to "bed down" on a road or pad. As an example of the relative infrequency of deterrence events, one operator reported just three deterrence events in 2018 out of a total of 203 polar bear sighting reports at its Prudhoe Bay unit. 95	Quoted sentence was out of place in the subsection on Habitat Loss and Alteration. Therefore, the first sentence of 2nd paragraph on Draft EIS page 3-135 has been deleted and beginning of 2nd sentence has been revised to read: "Disturbance from activities on gravel pads and from traffic on access roads would be likely to alter the use of habitats by bears moving nearby..." Text also been revised in 5th paragraph on page 3-137 and updated in 4th paragraph on page 3-140 to clarify industry practices and extent of incidental take by disturbance and intentional take by deterrence.
51.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	41	Marine Mammals	3-129, 3-134, 3-137 The DEIS refers to the technology for searching large areas for maternal dens as "forward-looking radiometry" or "FLIR." The FEIS should use the term "infrared sensors" rather than FLIR, which is technically inaccurate and does not reflect improved technology currently used by North Slope operators.	Draft EIS page 3-129 describes the method as "thermal imaging equipment (forward-looking infrared radiometry [FLIR]," the standard acronym used in the technical literature (York et al. 2004, Robinson et al. 2014). Sentence has been revised to add aerial infrared (AIR; Owyhee Air Research 2018) as an alternative term for this method.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Withheld	Withheld	—	80930	2	Marine Mammals	Polar bear critical denning habitat constitutes 77% of the program area (Vol 1, p. 3-133) and maternal dens are disproportionately high in high hydrocarbon potential zones (Vol 1, p. 3-134). The DEIS acknowledges that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat.” (Vol 1, p. 3-142) Nevertheless, there is no estimate of the number of bears that could be killed, injured or displaced by the leasing process or seismic testing.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
53.	Anne	Fuller	—	80944	3	Marine Mammals	Mitigation measures for the possible injuries and deaths of polar bears should be analyzed for effectiveness, including the identification of the number of bears that will be impacted. As climatic conditions have changed, BLM should obtain up to date studies of polar bears.	Mitigation measures are stipulated in ITRs, as described in Section 3.3.5 (Draft EIS pages 3-125, 3-134, 3-137, 3-140, 3-141, and 3-144). Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and summarized in Appendix J in the Final EIS. Research on the SBS stock of polar bears by USGS and USFWS scientists is proceeding continuously, so the findings of current and future studies will be applied, as appropriate, in future NEPA evaluations resulting from the leasing program. Please also see response to letter 81184, comment 4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Withheld	Withheld	World Wildlife Fund	81184	3	Marine Mammals	The BLM's draft EIS is missing information vital for a meaningful analysis of impacts on polar bears, including habitat use, feeding, denning, and population distribution on the Coastal Plain. The BLM's draft EIS, for example, fails to acknowledge the complete overlap in the timing and location of the proposed seismic survey with one-third of active maternal polar bear dens from the Southern Beaufort Sea subpopulation, despite the potential population-level impact it may have on an already stressed subpopulation. The draft EIS states that "the initiation of intensive human activities during the period when females seek den sites (October-November) would give them the opportunity to choose sites in less-disturbed locations (Amstrup 1993)." (DEIS vol 1. at 3-136) The BLM's draft EIS must provide identification of alternative site availability to polar bears for denning and explain how such areas would be protected from disturbance. In addition, the draft EIS must assess the potential resulting impacts on mothers and their offspring from such displacement. The draft EIS also must analyze how changing trends in snow depth, rainfall, wind drifting, and timing of snowfall in the Arctic Refuge could affect denning disturbance from seismic testing. Disturbance may lead to females and cubs abandoning dens before the cubs are ready to leave. Very small cubs cannot survive outside the den. The amount of time spent before mothers and cubs first emerge has been correlated with cub survival, and shorter denning periods correlates with higher cub mortality. BLM must confront these critical issues in a revised draft EIS by filling in the substantive gaps in missing information required for meaningful analysis, and explaining to the public how it will address them.	Information on polar bear habitat use, feeding, denning, and population distribution was described in Draft EIS Section 3.3.5, Affected Environment. Seismic exploration of the program area will be the subject of a separate NEPA analysis, requiring the development and approval of new ITRs under the MMPA to cover Arctic National Wildlife Refuge lands, including a separate Biological Assessment and Biological Opinion. The Draft EIS described maternal denning habitat, including a map (Appendix A, Figure 3-24) showing the distribution of potential denning habitat in the program area, and the mitigation measures used to locate and protect occupied dens. A geospatial model to predict the distribution of snow drifts suitable for denning is available and was cited (Liston et al. 2015) in the Draft EIS, but the needed data are not yet available for the program area (i.e., a data-collection network of meteorological stations has not yet been established).

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55.	Withheld	Withheld	World Wildlife Fund	81184	4	Marine Mammals	Seismic: BLM's draft EIS wholly fails to consider any 3-dimensional (3D) seismic surveying, a highly significant activity required as part of the leasing program that will affect important resources and uses of the Coastal Plain, especially polar bears. The proposal for seismic activity which was publicly available in late 2018 will not be effective at detecting all maternal dens prior to commencement of a seismic survey or other oil and gas activities. The draft EIS ignored expert studies provided to BLM by Dr. Steve Amstrup explaining the limitations of Forward Looking Infra-Red (FLIR) detection technology and stating that 50 percent of the occupied maternal dens will likely go undetected if that technology is employed in early-mid winter on the Coastal Plain. BLM also ignored industry data on FLIR technology, which appears to be more recent. Furthermore, the draft EIS ignores data from Dr. Amstrup assigning a 25 percent chance that survey equipment will run directly over at least one maternal den, killing the mother and cubs inside. (See Letter from Dr. Steven Amstrup to Bureau of Land Management (Aug. 15, 2018)) For the undetected maternal dens, there is a 100 percent chance—therefore a certainty—of disturbance from vibrations, given the spatial overlap of the proposed oil and gas activities with high-quality denning habitat. Moreover, disturbances of maternal dens that result in potentially lethal outcomes for adult females and cubs may have population-level impacts on the already stressed Southern Beaufort Sea subpopulation. Such an outcome would be in direct conflict with mandated actions in the U.S. Fish and Wildlife Service (FWS) Polar Bear Conservation Management Plan, which states that protecting maternal denning habitat is critical to recovering the Southern Beaufort Sea subpopulation.	Seismic exploration of the program area will be the subject of a separate NEPA analysis in the future and will require the development and approval of new ITRs to cover Arctic National Wildlife Refuge lands, including a separate Biological Assessment and Biological Opinion, to ensure compliance with the requirements of the MMPA and ESA. Text has been revised to clarify that process. The detectability of polar bear dens with airborne FLIR was acknowledged in the Draft EIS as being imperfect, but that technique remains the most effective way to search for dens over large geographic areas. Its effectiveness can be enhanced by conducting multiple surveys and by using other techniques, such as handheld FLIR sensors and trained dogs, in certain circumstances. Unfortunately, the unpublished information on FLIR efficacy cited in Dr. Amstrup's comments (Smith et al., in prep.) has not yet been published and thus was unavailable for review and inclusion in the Draft EIS. However, the Draft EIS text has been revised to include reported figures on the efficacy of FLIR surveys. Please also see response to letter 81368, comment 42. The Draft EIS described disturbance of maternal dens as a potential impact of leasing. Although den disturbances cannot be eliminated completely, they can be mitigated using best practices described in current ITRs (pre-activity surveys and 1-mile protective buffers around occupied dens, as summarized in Appendix J), which form the basis

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55. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Such an outcome would also be in direct conflict with the Inuvialuit-Iñupiat Polar Bear Management Agreement in the Southern Beaufort Sea, which prohibits disturbance of dens and hunting of family groups (First signed in 1988 and reaffirmed in 2000 by the Inuvialuit Game Council and the North Slope Borough Fish and Game Management Committee, the Inuvialuit-Iñupiat Agreement's first objective is "to maintain a healthy viable population of polar bears in the southern Beaufort Sea in perpetuity.") and with the ESA, which requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary. 16 U.S.C. § 1362(3). Section 9 of the ESA makes it unlawful for any person—including private and public entities hired to conduct seismic surveys—to "take" individuals of an endangered species and, by regulation, a threatened species. 16 U.S.C. § 1533(d) BLM cannot engage—or permit others to engage—in activities that will result in unauthorized incidental take of listed species. See 16 U.S.C § 1536(a)(2). Throughout its analysis, BLM improperly relies on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears. The agency fails to state that such ITRs would be required for this leasing program, nor does the draft EIS explain BLM's assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities.	for new ITRs being developed for the program area. The Inuvialuit-Iñupiat Agreement is an agreement among Native hunters in Alaska and Canada that was developed to reduce subsistence harvest-related effects on the SBS stock; hence, it is not directly applicable to actions by U.S. federal agencies, which instead use the ITR/LOA process to mitigate potential effects on denning female polar bears.

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56.	Withheld	Withheld	World Wildlife Fund	81184	6	Marine Mammals	BLM's draft EIS fails to examine the direct, indirect and cumulative impacts of the proposed oil and gas development on polar bears against this backdrop of continued climate change, which, according to the best available science, is already causing habitat loss, conflicts with humans, and energetic costs, including nutritional stress and strenuous long-distance swimming for polar bears. Although the draft EIS notes some of the relevant science, it omits some of the most important information on the impacts of climate change on the viability of the Southern Beaufort Sea stock. For example, the draft EIS must acknowledge that ice-free days are increasing and will continue to increase unless CO2 emissions are reduced. The draft EIS also must disclose the likely impacts to the Southern Beaufort Sea subpopulation from the increased ice-free days and increased distances that polar bears must traverse from sea ice to land. Finally, the draft EIS ignores the cumulative impacts of climate change and oil and gas development on Arctic ringed seals, a species listed as threatened under the ESA and also as depleted under the MMPA, which serve as polar bears' primary prey. Therefore, BLM must revise the draft EIS to include adequate baseline information on the Southern Beaufort Sea subpopulation of polar bears and Arctic ringed seals as well as best available research on their potential population declines due to climate change. At a time when climate change is transforming the Arctic landscape, a revised draft EIS must also include a full accounting of the total greenhouse gas effects that would arise from the industrial activities proposed on the Coastal Plain.	The trends in sea ice duration and extent and corresponding importance to polar bears and other marine mammals are described in Section 3.3.5 on Draft EIS pages 3-124 to 3-125, 3-126, 3-128 to 3-129, and 3-130 to 3-132. The most recent information on population estimates, status, and trends for ringed seals is provided on Draft EIS page 3-130. The effects of greenhouse gas emissions were discussed in the Physical Environment section of the Draft EIS.

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57.	Withheld	Withheld	World Wildlife Fund	81184	7	Marine Mammals	The draft EIS fails to analyze the impacts of habitat fragmentation from industrial activities on the Southern Beaufort Sea polar bear subpopulation. In Appendix B, the draft EIS describes the expansive industrialization of the Coastal Plain as a Reasonably Foreseeable Development scenario. This scenario assumes central processing facilities (CPF), each of which would include oil pipeline connections to the Trans-Alaska Pipeline, water and electricity pipelines totalling hundreds of miles, barge landings, staging pads, seawater treatment plants located along the coastline, a generator, airstrip, storage tanks, a communications center, waste treatment units, and maintenance shop, as well as living quarters and offices. Hundreds of miles of gravel roads, and undisclosed miles of ice roads, would be constructed, and gravel mines would unearth hundreds of additional acres. The BLM's draft EIS fails to take a hard look at the enormous imposition of this industrial infrastructure and these associated activities on critical habitat for the Southern Beaufort Sea polar bears, and provides no evidence to support its conclusion that the impacts will be minimal. The BLM must revise the draft EIS to assess the impacts of habitat fragmentation from industrial expansion on the movements, behaviors, health, and distribution of Southern Beaufort Sea polar bears, including impacts to Southern Beaufort Sea polar bears from potential increases in human-bear conflict resulting from the increased likelihood of human-bear interaction under such scenarios.	The hypothetical development scenario included in the Draft EIS was provided to give a general indication of the types of activities that are likely to occur if oil or gas are found during exploration and if development subsequently proceeds in the program area. It is not possible to predict ahead of time where that development might occur (it would differ among action alternatives), so it is not possible at this stage to predict in turn the specific effects on critical habitat and associated potential effects on polar bear movement, behavior, and distribution, including increased human interactions, in more than the general ways described in the Draft EIS. Future NEPA analyses will be required for specific development proposals, at which time more definitive analyses of such potential impacts will be possible. Any development plans will be the subject of Biological Assessments and Biological Opinions under the ESA to assure that the SBS stock is not jeopardized and that destruction or adverse modification of critical habitat will not occur.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Withheld	Withheld	World Wildlife Fund	81184	8	Marine Mammals	The draft EIS is missing essential information on the annual number of all human-caused mortalities for Southern Beaufort Sea polar bears and fails to connect this existing baseline level of take to its analysis of future oil and gas impacts on the stock's population and expected changes to annual rates of recruitment or survival in light of climate change. It completely ignores the Potential Biological Removal (PBR) level established for the SBS stock under the MMPA. A revised draft EIS must include and consider this baseline information in its evaluation of the status of the Southern Beaufort Sea stock and incorporate it into a cumulative effects analysis.	Human-caused mortality was described in the Draft EIS on page 3-125 (5th paragraph, re. Native harvest) and on page 3-140 (lethal take from oil and gas activities), but more information from the most recent USFWS Polar Bear Program annual report for 2017 (Miller et al. 2018) has been added on Draft EIS page 3-125 to quantify other categories of human-related mortality. The most recent estimate of PBR for the SBS stock is 14 animals, based on the minimum population estimate of 782 bears in the most recent draft stock assessment report by USFWS (82 FR 28526), which has not yet been finalized. This low PBR estimate underscores the importance of avoiding program-related mortality because the annual subsistence harvest alone approaches or exceeds PBR for this stock. However, it should be noted that "The standard for authorizing incidental take for activities other than commercial fisheries under section 101(a)(5) continues to be, among other things that are not related to PBR, whether the total taking will have a negligible impact on the species or stock. Nowhere does section 101(a)(5)(A) reference use of PBR to make the negligible impact finding or authorize incidental take through multiyear regulations, nor does its companion provision at 101(a)(5)(D) for authorizing non-lethal incidental take under the same negligible-impact standard" (84 FR 24962). A determination of negligible impact on the SBS stock of bears will be required for

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	approval of the ITRs currently being developed for the Arctic National Wildlife Refuge.
59.	Todd	Campbell	Conservation Biology course	81185	12	Marine Mammals	noise pollution can also be a huge problem with vessels and other machinery that would be used in oil and gas drilling. We would need an understanding of how noise was going to be regulated and where the noise would be traveling too and how severely that would affect certain mammals. Alternative D does have the biggest protection of marine mammals apart from alternative A, which has been deemed unviable due to the Tax Cuts and Jobs Act of 2018. Alternative D seems to show 0.5- to 4-mile buffers around 17 rivers and streams which is good for some noise and water pollution reduction. This alternative also shows that it would have the lowest habitat destruction. What the EIS fails to show is the key differences for Alternative D-1 and Alternative D-2 in regards to marine mammals. There is no way to define which one would seem like the better option since they are so similar. I also suggest there be in place a required plan for the quickest ways to clean up oil-spills if ever were to occur and if drilling would continue once a spill had happened. Alternative D seems like the best and most reasonable alternative for the marine mammals' future and conservation.	For marine mammals, noise is regulated by means of measuring sound sources, or applying published sound levels of pertinent equipment and analyzing them with marine mammal audiograms and behavioral threshold levels established by regulatory agencies to understand potential noise impacts. This type of analysis has been conducted under stipulations or BMPs in the petroleum areas to the west of the program area. BLM anticipates that the same type of analysis will occur before specific projects are developed in the program area. More comparative discussion of Alt D1 and the revised Alt D2 has been added to the Final EIS, mainly affecting polar bears. The effects of those two alternatives would not differ appreciably for other marine mammals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Steven	Amstrup	Polar Bears International	81368	32	Marine Mammals	The Drafters attempt to make a case that existing incidental take regulations combined with new operational restrictions intended to avoid some areas preferred by polar bears (including selected fractions of maternal denning habitat and efforts to detect dens in advance of on-the-ground disturbances) will prevent population-level negative impacts from exploration and development. The Southern Beaufort Sea polar bear population, however, already is in decline due largely to poor survival of cubs (Bromaghin et al 2016) and polar bears have been granted protection as a threatened species under the U.S. Endangered Species Act. The negative impacts acknowledged in the DEIS are not consistent with conservation in light of the polar bear's threatened status in that the impacts are virtually certain to accelerate the existing population decline. For that reason, they cannot be considered "negligible."	Section 3.3.5 of the Draft EIS described the threatened listing of polar bears under the ESA as well as the declining status of the SBS stock. Before industry activities can commence in the program area, the ITRs, BA, and BO being developed for the Arctic National Wildlife Refuge will require a negligible impact determination under the MMPA and a no-jeopardy finding under the ESA. These evaluations and determinations by federal agencies in accordance with federal laws are consistent with conservation of the species. The word "negligible" was used 8 times in 7 paragraphs in Draft EIS Section 3.3.5, in two specific contexts: (1) to be consistent with the finding of negligible impact required to authorize incidental take under the MMPA, and (2) to describe effects that would be so minor in magnitude, extent or duration, or so unlikely, that they would have little impact. Examples of the first use (to which the comment is presumed to refer) occur on page 3-125, 3-137, and 3-142. Examples of the second use occur on page 3-135, 3-138, 3-141, and 3-143 (twice in same paragraph). The use of the term in these seven locations have been reevaluated and other terms have been added or substituted in the Final EIS, where warranted, for clarity of meaning.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Steven	Amstrup	Polar Bears International	81368	33	Marine Mammals	In addition to unconvincing and contradictory arguments about the risks to polar bears from oil and gas development activities, the Drafters largely ignore the potential impact on polar bear maternal dens of exploratory seismic testing that would occur in advance of on-the-ground developments. The Drafters of the DEIS acknowledge that climate change has already reduced this population by approximately half, and a major symptom contributing to that decline is reduced cub survival (Bromaghin et al. 2016). They further admit that 22% of Southern Beaufort Sea polar bears may den annually on the Arctic Refuge Coastal Plain. Yet, the DEIS claims the impacts on denning mother bears and their cubs will be negligible. But what is negligible for a population already in steep decline? As proposed, the 3 dimensional (3D) seismic testing would disturb 88% of maternal denning habitat. If the survey is actually conducted in the fashion of other recent seismic surveys, including multiple paths along grid lines, it would impact 92% or more of identified maternal denning habitats. Such a survey could disturb up to 14 denning mother bears, and it would on average run directly over 2.2 occupied dens with likely fatal consequences for mother bears and cubs. Even assuming the lowest possible estimate of 10 undetected maternal dens, there is a 79% chance one or more dens will be run over, and, on average 1.4 dens would be crushed. Therefore, even with the lowest probable number of dens occurring on the Arctic Refuge Coastal Plain, the risk of fatal encounters with seismic vehicles is too high to be considered negligible.	Please see responses to letter 81368, comment 32, and letter 81184, comment 4. The new ITRs being prepared by USFWS to cover oil and gas activity in the Arctic National Wildlife Refuge will require a finding of negligible impact under the MMPA and a no-jeopardy finding under the ESA before seismic exploration can begin in the program area. The USFWS estimates that 20 maternal dens may occur in the program area annually, not 29, and the efficacy of airborne FLIR surveys is greater than 50%. Please also see response to letter 81368, comment 42.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Steven	Amstrup	Polar Bears International	81368	34	Marine Mammals	The Arctic Refuge Coastal Plain includes the highest density of denning habitat in Alaska. The U.S. Fish and Wildlife Service Conservation Management Plan (U.S. Fish and Wildlife 2016), which was prepared in response to the polar bear's threatened status, concludes that protecting denning habitats is a critical measure for maintaining the maximum possible numbers of polar bears until humans halt greenhouse gas rise and stabilize the sea ice that polar bears require. Because the Arctic Refuge Coastal Plain provides terrestrial denning habitats vital to the survival of the species, it has been designated critical habitat for polar bears of the Southern Beaufort Sea. The importance of polar bear denning habitats on the Arctic Refuge Coastal Plain and the dramatically declining status of this population mean the impacts of exploration and development of oil and gas reserves are not likely to be negligible or in any way compatible with the U.S. Fish and Wildlife Service goal of assuring that polar bear populations are maintained to the maximum extent possible until greenhouse gas rise is halted. Rather, the combined impacts of activities and developments proposed in the DEIS are virtually certain to accelerate the current declining trend of the Southern Beaufort Sea polar bear population.	The Draft EIS accurately described designated critical habitat and the density and importance of maternal denning in the program area. This programmatic EIS analyzes leasing in the program area and the general types of impacts that may result from that leasing. The impacts likely to result from specific activities that follow leasing, such as seismic exploration, drilling, and development, will be analyzed separately in future NEPA documents focusing on those proposed activities. Post-leasing activities in the program area also will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS. Mortality data from the USFWS Polar Bear Program annual report for 2017 (Miller et al. 2018) show that industry activity in Alaska has had a substantially smaller impact (0.7% of 420 bears removed during 2008–2017) on the SBS stock than has the direct removal of bears through human harvest (90.7%).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Steven	Amstrup	Polar Bears International	81368	35	Marine Mammals	Failure to discuss seismic testing — Without giving any detail, the DEIS states “Processed area-wide three-dimensional (3D) seismic data would be available for licensing to all potential bidders at the time of the first lease sale. (Volume 2 B-8).” Such testing would be used to precisely define drilling sites, other pad locations, and spatial footprints of roads and pipelines. Because no such seismic data currently exist, and would need to be newly acquired, the fact that pre-development seismic exploration is not analyzed in the polar bear section of the DEIS is an egregious omission.	Appendix B describes the seismic exploration associated with the hypothetical development scenario analyzed in the EIS. Seismic exploration can be done across the full extent of the program area, even in portions not available for lease. Site-specific NEPA analysis will be done for any proposed seismic exploration, including analysis of potential impacts on polar bears. The range of impacts related to polar bears is discussed in Section 3.3.5 of the EIS.
64.	Steven	Amstrup	Polar Bears International	81368	37	Marine Mammals	Both ends of the polar bear's behavior spectrum, with regard to potential disturbances around dens, can result in negative impacts from activities such as 3D seismic testing. Whether from an innate feeling of security in a den or habituation to noises and vibrations of vehicles moving around them; the “comfort level” many polar bears show with activities outside their dens could result in waiting too long to leave a den when the disturbance is truly dangerous for them. The above observations make it clear that some bears will not leave before their den is actually run over and crushed. Even if a mother bear is able to exit her den ahead of oncoming seismic vehicles-in a circumstance where a den is in the direct path of seismic vehicles, her departure threshold might have been exceeded so suddenly as to prompt hurried evacuation resulting in cubs being left behind and either crushed or abandoned. Other females may be prompted to emerge and even leave dens if an unnatural stimulus is only nearby.	The postulated effect is hypothetical and speculative, but the Draft EIS recognized that the responses of polar bears to human activities varies widely across the range from tolerance to disturbance. Commenter correctly recognizes the risk posed by 3D seismic exploration to bears in maternal dens, underscoring the importance of repeated den surveys using airborne FLIR before beginning exploration and the minimization of disturbance through mitigation. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

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65.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	38	Marine Mammals	Drafters of the DEIS suggest dens will be detected and avoided by use of forward looking infrared (FLIR) surveys conducted in advance of on-the-ground activities (see below, discussion of advance detection of dens). The track record of such surveys in active oil field areas west of the Arctic Refuge reveals significant limitations, however. Between 2004 and 2016, FLiR surveys conducted in advance of various oil field operations along Alaska's North Slope correctly identified 12 maternal dens but missed 11 dens (essentially a 50% detection rate) that were within the survey areas. The denning habitat on the Arctic Refuge Coastal Plain is more expansive and far more complex than other areas of Alaska's North Slope where oil and gas activity has occurred-and where FLiR has been used to find dens. Therefore, it seems unlikely detection rates on the Arctic Refuge Coastal Plain will be any higher than the -50% historic record. With between 20 and 29 pregnant females denning on the much more expansive and complicated Arctic Refuge Coastal Plain each year, and with a -50% detection rate for FLIR, half or between 10 and 15 of the dens annually expected to occur on the Coastal Plain are likely to be undetected before seismic testing begins in winter.	Please see response to letter 81368, comment 42, regarding den detectability using airborne FLIR. The USFWS estimates that approximately 20 maternal dens occur annually in the program area, not 29, as described in Appendix J in the Final EIS. As stipulated by ITRs, required mitigation is to avoid occupied dens by 1 mile, as described on Draft EIS page 3-134. Please also see responses to letter 79893, comment 18; letter 81368, comments 32 and 33; and letter 81184, comment 4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Brook	Brisson	Trustees for Alaska	81368	39	Marine Mammals	If such a survey were conducted multiple times, the average number of dens crushed would be 0.45, and on average 13 dens would be exposed to potential disturbance. Similarly, if 10 undetected dens are present there would be a 26% chance that vehicles would run directly over one or more. And, if there are as few as 4 dens present, it is virtually certain that at least one occupied den would be exposed within the 65-meter buffer surrounding each side of proposed grid lines. Whereas all bears denning within 65 meters of a survey path may not exit their dens, records show that some will. Even if the immediate effect of such a disturbance is not fatal, early departure from maternal dens leads to poorer cub survival (Amstrup and Gardner 1994, Rode et al. 2018), and there could be latent lethal consequences. Given the declining status of the Southern Beaufort Sea population is driven largely by poor survival of young, such disturbances, added to immediate mortalities, can only exacerbate ongoing declines.	Please see responses to letter 81368, comments 32, 33, and 37, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS, and will require a finding of negligible impact under the MMPA and a no-jeopardy finding under the ESA before seismic exploration can begin in the program area. The USFWS estimates that 20 maternal dens may occur in the program area annually, not 29, as described in Appendix J in the Final EIS, and published information indicates the efficacy of airborne FLIR surveys is greater than 50%. Please also see response to letter 81368, comment 42.

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67.	Brook	Brisson	Trustees for Alaska	81368	40	Marine Mammals	With a 15-meter wide footprint, over 14% of the Arctic Refuge Coastal Plain denning habitat would be "run over" by seismic vehicles and 92% of the habitat would be within the 65-meter-wide zone known to disturb some mother bears in their dens (Table 2). If the true path falling under seismic vehicles is 15 meters wide rather than 3 meters wide and if there are 15 undetected dens on the Refuge, each such survey would have a 90% probability of running over one or more occupied maternal dens, and on average (if the survey were repeated multiple times) vehicles would run over 2 maternal dens. If there were 10 undetected dens, there would be a 79% probability that one or more den will be run over, and on average 1.4 dens would be crushed. And, we must remember these outcomes do not include the additional (and a priori inestimable) risk from the miscellaneous cross-grid tracks that apparently accompany seismic surveys as they are actually conducted.	Please see responses to letter 81368, comments 32, 33, and 37, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts and Appendix J in the Final EIS, and will require a finding of negligible impact under the MMPA and a no-jeopardy finding under the ESA before seismic exploration can begin in the program area. The USFWS estimates that 20 maternal dens may occur in the program area annually, not 29, as described in Appendix J in the Final EIS, and published information indicates the efficacy of airborne FLIR surveys is greater than 50%. Please also see response to letter 81368, comment 42.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	41	Marine Mammals	Therefore, whether as few as 20 females enter maternal dens on the Arctic Refuge Coastal plain, or as many as 29, the risk of fatal encounters with seismic vehicles is very real and its impacts cannot be described as negligible.	Please see responses to letter 81368, comments 32, 33, and 37, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts and Appendix J in the Final EIS, and will require a finding of negligible impact under the MMPA and a no-jeopardy finding under the ESA before seismic exploration can begin in the program area. The USFWS estimates that 20 maternal dens may occur in the program area annually, not 29, as described in Appendix J in the Final EIS, and published information indicates the efficacy of airborne FLIR surveys is greater than 50%. Please also see response to letter 81368, comment 42.

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69.	Steven	Amstrup	Polar Bears International	81368	42	Marine Mammals	claims for reliability of denning detection surveys are unfounded. Dens are invisible to the eye throughout winter and attempts to discover them have relied on forward looking infrared (FLIR) surveys designed to detect the heat emitted by denning mother bears and their cubs. Research published 14 years ago and refined 4 years ago (Amstrup et al. 2004, York et al. 2004, Robinson 2014) emphasized shortcomings in such surveys. Some of the shortcomings can be overcome by multiple surveys and by limiting surveys to weather conditions ideal for FLiR operation. In practice, however, the den detection rate of FLIR, as it has been applied in oil-field areas west of the Arctic Refuge, has been unacceptably low. Between 2004 and 2016, FLiR surveys conducted in advance of various oil field operations along Alaska's North Slope correctly identified 12 maternal dens but missed 11 dens that were within the survey areas (Smith et al. In Prep). These surveys also identified 22 "hotspots" that were presumed to be maternal dens but turned out not to be dens. So, not only did these surveys miss almost as many dens as they detected (11 versus 12, an approximately 50% detection rate), they also led to much wasted time and effort as staff attempted to monitor and avoid sites that were not dens at all.	Until better methods are developed, FLIR represents the best available technology for detecting maternal dens of polar bears, as reported in the 2004 publication by Amstrup et al., which concluded that FLIR was "effective in detecting dens on land," although the authors noted that FLIR surveys "were not 100% effective." Using an earlier, less sensitive version of the technology than is currently used, 19 (83%) of 23 dens were detected through multiple surveys, whereas the other 4 (17%) were not detected (Amstrup et al. 2004). The text on Draft EIS page 3-134 stating that den surveys using FLIR "do not provide perfect detection" has been revised to quantify the efficacy of the technique, based on published literature. Unfortunately, the manuscript referenced in the comment (Smith et al., in prep.) has not yet been published in peer-reviewed literature and is unavailable for review and citation. The imperfect detectability of dens by airborne FLIR underscores the importance of conducting repeated surveys to increase detections, as well as using other techniques to verify dens in specific locations, such as handheld FLIR and trained dogs, where feasible. This point has been reinforced in the Final EIS text.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Brook	Brisson	Trustees for Alaska	81368	43	Marine Mammals	A survey conducted in February of 2018 suggests FLiR surveys might be even less effective in the more complicated terrain of the Arctic Refuge Coastal Plain. At that time, the U.S. Fish and Wildlife Service contracted a 10-day intensive FLiR survey over portions of the Arctic Refuge Coastal Plain and adjacent habitat that is known to be used frequently by denning females. Ten hotspots were recorded (Owyhee Air Research, Inc. 2018), but only 2 actually turned out to be dens. There were no known (by radio telemetry) dens in the area searched, so we cannot know how many dens this FLiR survey aircraft actually flew over and failed to detect. However, based on recent patterns of observed denning, nearly 30 denning bears could have been on and immediately adjacent to the Refuge last winter. Many of these dens could have been in the area within which this February 2018 FLiR survey was conducted, and several dens may have been missed.	Commenter is correct: it is not possible to know how many occupied dens may have been present and missed, but the suggested number (evidently based on Dr. Amstrup's revised estimate of the highest number of dens that potentially could occur in the entire program area) is higher than the 20 dens estimated by USFWS biologist Ryan Wilson (see final paragraph on Draft EIS page 3-128). Wilson's estimate is described in Appendix J in the Final EIS. Note that the February 2018 survey did not cover the entire program area, so it was not a comprehensive survey. Please see the preceding comment response (letter 81368, comment 42) for more information about detectability of maternal dens using airborne FLiR.
71.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	44	Marine Mammals	The higher density and greater complexity of denning habitat on the Coastal Plain, and thicker snow collecting over the tops of dens in the more deeply incised gullies on the Arctic Refuge, increase likelihood that more dens will be missed compared to flatter and more well-defined habitats farther west. All of these factors make it likely that FLiR den detection methods, which have been only about 50% successful in the existing oil field areas, are likely to be even less successful on the Arctic Refuge Coastal Plain.	Please see response to letter 81368, comment 42, regarding the efficacy of the airborne FLiR technique, which remains the best available technology for locating maternal dens over large areas of the Coastal Plain.

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72.	Megan	Williams	o.b.o. Trustees for Alaska	81368	45	Marine Mammals	The DEIS suggests that ground-truthing with search dogs can enhance detections. Carefully trained dogs can find dened bears. However, dogs that have been used in Alaska mark the locations of dens by digging into them, and therefore must be retrieved by their handlers before they compromise the den. Dogs attempting to dig into dens simulates the activity of wolves and other bears, the only predators that can be a threat to polar bears (Richardson and Andreashek 2006, Amstrup et al. 2006). At the very least, using such dogs to find dens is an added source of stress that may cause den abandonment/relocation during a time in the denning cycle that could impact young cubs.	Handlers do not allow their dogs, which are highly trained, to penetrate the chamber of occupied dens. Text has been clarified in the Final EIS to describe the use of dogs, as well as drone-mounted or handheld FLIR, as techniques to verify the presence of suspected dens identified as "hotspots" on airborne FLIR surveys.
73.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	46	Marine Mammals	More importantly, dogs have historically been used only in small areas with relatively high historic denning frequency, or to verify whether a FLIR hotspot was a den. Dog surveys in mid-winter require travel by Tucker or other enclosed vehicles to protect dogs from the harsh weather, and dogs are often outside searching for only relatively brief periods. Dogs have never been used to search expansive areas of habitat. Suggesting they can efficiently, effectively, and without probable disturbance of denning bears, search the 3000 km of denning habitat on the Arctic Refuge Coastal Plain seems dubious at best.	The intention of the Draft EIS authors was not to depict the widespread use of dogs over large areas as a viable den survey technique to replace the use of airborne FLIR. Text has been clarified in the Final EIS to describe the use of dogs, as well as drone-mounted or handheld FLIR, as techniques to verify the presence of suspected dens identified as "hotspots" on airborne FLIR surveys.
74.	Steven	Amstrup	Polar Bears International	81368	47	Marine Mammals	The DEIS acknowledges that den detection surveys are "not perfect" (3-134) but gives no hint that they actually have been effective only about half the time—a much lower detection rate than most reasonable people would call just "not perfect." At present, there is no reliable way to assure that dens will not be affected by exploratory surveys or subsequent development activities.	Please see response to letter 81368, comment 42, for more information about detectability of maternal dens using airborne FLIR.

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75.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	49	Marine Mammals	The DEIS acknowledges that the Southern Beaufort Sea polar bear population is in decline and that its status can only become more precarious as we move into the future. The DEIS also acknowledges that activities related to oil and gas development, if allowed in the Arctic National Wildlife Refuge, will further compromise the status of the polar bear population. Seismic testing and other on-the-ground activities, regardless of the presumed safeguards described in the DEIS, are highly likely to cause direct mortalities of polar bear mothers and/or their cubs. They are certain to increase stresses in denning and non-denning animals, and they are virtually certain to accelerate the decline in abundance of this population. Given that the Southern Beaufort Sea polar bear population declined from around 1800 in the 1980s to approximately 900 animals in 2010 (Bromaghin et al. 2016), the added disruptions described in the DEIS are inconsistent with population conservation and established management and conservation plans.	Please see responses to letter 81368, comment 32, and letter 94076, comment 92.

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76.	Brook	Brisson	Trustees for Alaska	81368	51	Marine Mammals	Although we have no evidence of individual bears returning to the same den location in multiple years, we know they do tend to return to the same general location (Amstrup and Gardner 1994). Some pieces of den habitat have seemed more “preferred” than others, but these “preferences” are not always hard and fast. For example, an abandoned staging pad on the coast near Prudhoe Bay was used repeatedly for many years but has apparently not been used recently. We know that the Arctic Refuge Coastal Plain habitats have been consistently preferred since the earliest data on denning have been collected. We don’t know why some areas within the Refuge may previously have been preferred over others that have similar habitat and snow depth features. But we do know that as human-caused climate change continues, the distribution of snow will be changing, and coastal erosion will alter some currently desirable locations. Sections of suitable den habitat that have been preferred for maternal denning in the past may become less preferred and other less used areas of suitable habitat may become more preferred. We also know that the Southern Beaufort Sea polar bear population is experiencing serious decline due in large part to poor survival of cubs (Bromaghin 2016). Therefore, BLM should protect all identified habitat to assure polar bears face the fewest restrictions possible in giving birth to their cubs.	The Draft EIS (p. 3-129) relied on published habitat analyses and mapping by USGS and USFWS biologists (including the commenter) to identify potential maternal denning habitat in the program area and described other methods that can be used to identify denning habitat, such as IfSAR and 3D snow-drift modeling. Den surveys of such potential habitat will be required in advance of exploration and construction activities and occupied dens found by the surveys must be avoided by 1 mile, representing the best available approach to detection and mitigation.

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77.	Steven	Amstrup	Polar Bears International	81368	51	Marine Mammals	Although we have no evidence of individual bears returning to the same den location in multiple years, we know they do tend to return to the same general location (Amstrup and Gardner 1994). Some pieces of den habitat have seemed more “preferred” than others, but these “preferences” are not always hard and fast. For example, an abandoned staging pad on the coast near Prudhoe Bay was used repeatedly for many years but has apparently not been used recently. We know that the Arctic Refuge Coastal Plain habitats have been consistently preferred since the earliest data on denning have been collected. We don’t know why some areas within the Refuge may previously have been preferred over others that have similar habitat and snow depth features. But we do know that as human-caused climate change continues, the distribution of snow will be changing, and coastal erosion will alter some currently desirable locations. Sections of suitable den habitat that have been preferred for maternal denning in the past may become less preferred and other less used areas of suitable habitat may become more preferred. We also know that the Southern Beaufort Sea polar bear population is experiencing serious decline due in large part to poor survival of cubs (Bromaghin 2016). Therefore, BLM should protect all identified habitat to assure polar bears face the fewest restrictions possible in giving birth to their cubs.	The Draft EIS (p. 3-129) relied on published habitat analyses and mapping by USGS and USFWS biologists (including the commenter) to identify potential maternal denning habitat in the program area and described other methods that can be used to identify denning habitat, such as IfSAR and 3D snow-drift modeling. Den surveys of such potential habitat will be required in advance of exploration and construction activities and occupied dens found by the surveys must be avoided by 1 mile, representing the best available approach to detection and mitigation.

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78.	Steven	Amstrup	Polar Bears International	81368	53	Marine Mammals	The DEIS recommends special protections for some denning female bears (e.g. ROP 10 (2-20). Such provisions, however, are only of value if locations of dens are known. In the past, only about half of the dens in areas surveyed with forward looking infrared (FLIR) have been detected. This means that half of the dens on the Coastal Plain area in any given year will be undetected and vulnerable to possible disruption. Also, this operating procedure states that "alternate protective measures (for detected dens) may be approved by BLM Authorized Officers." But it does not explain what kinds of protective measures might be invoked or how BLM would evaluate and approve them. Given that this proposed activity is on a National Wildlife Refuge, in an area of critical habitat, and mandated for protection in order to aid polar bear reproduction; details of what kinds of protections might be invoked, and how den detection rates will be improved, are necessary.	BLM will follow established guidelines developed by the USFWS for industrial activities in the Arctic, as well as any future measures the USFWS deems appropriate to protect polar bear dens.
79.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	54	Marine Mammals	at 3-102 the DEIS states "Exceptions to stipulations of no surface occupancy would be made for roads, pipelines, barge landings, and docks." There is, however, no explanation of what conditions and at whose discretion these protections would be waived. This kind of language could be used to void even the minimal protections for polar bears described in the DEIS and is totally unacceptable. Given the likelihood that protections proposed in the DEIS are unlikely to provide polar bears the protections they need, it is especially alarming that even those protections might be waived without explicit descriptions of why.	Approval under Lease Stipulations 4 and 9 would be on a case-by-case basis, in consultation with the USFWS or NMFS, or both, as appropriate.

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80.	Megan	Williams	o.b.o. Trustees for Alaska	81368	55	Marine Mammals	Improper reliance on the “success” of past mitigation - The DEIS suggests repeatedly that past mitigation efforts have been successful in preventing non-negligible impacts on polar bears, claiming for example (3-137) that the “types of activities typical of oil and gas exploration, development, and production projects in northern Alaska were not likely to have population-level effects on polar bear populations “ The DEIS describes incidental take regulations (ITRs) as the principal mechanism for regulating human activities in regard to polar bears (3-140). The current regulations allow industry operators non-fatal takes of small numbers of polar bears provided that such takes result in negligible impacts on the species. It is critical to note, however, that the protections adopted in ITRs can be applied only once a bear or den is detected. The principal challenge for protecting bears in maternal dens, the most important threat to polar bears from activities proposed in the DEIS, is detecting them (see section on seismic survey). Whereas industry has been pretty good at implementing avoidance procedures when dens or bears are detected, we know that detection rates have been too low to be considered adequate protection for denning bears.	Please see response to letter 81368, comment 42, regarding the efficacy of the airborne FLIR technique, which remains the best available technology for locating maternal dens over large areas of the Coastal Plain.

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81.	Steven	Amstrup	Polar Bears International	81368	57	Marine Mammals	There is no documentation of how many undetected dens may have been disturbed over the years of oil and gas activities in Alaska. Importantly, we also do not know the fate of bears (disturbed before being detected), after they left the denning area from which they were disturbed. We usually do not know whether cubs survived to weaning age after they traveled out of sight onto the ice or whether they perished shortly thereafter. What we do know is that post-birth cub loss of recent years is more than double that of the past, and we know that mother bears that stay in dens longer are more successful in rearing their cubs (Amstrup and Gardner 1994, Rode et al. 2018)	Additional discussion of den detectability using airborne FLIR has been added to the Final EIS, and the number of undetected dens has been estimated. The survival value of cubs remaining in dens through the entire denning period was described in the Draft EIS, citing the same references mentioned in the comment.
82.	Megan	Williams	o.b.o. Trustees for Alaska	81368	59	Marine Mammals	The DEIS makes the case that, despite numerous encounters, lethal takes associated with oil and gas activities have been rare (3-140).	Comment is accurate; lethal takes by industry in Alaska have been rare under the current and previous ITRs, as described on Draft EIS page 3-140.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
83.	Steven	Amstrup	Polar Bears International	81368	59	Marine Mammals	Two personal examples illustrate the kinds of interactions that could become common if oil field activities expand into the Arctic National Wildlife Refuge as polar bear welfare is declining due to sea ice loss. In September 2002, I had to kill a severely emaciated bear that was posing a safety threat to workers traveling to and from the Endicott Island production facility. This bear had become so aggressive it was attacking vehicles passing by. Attempts to deter the actions and drive the bear away were unsuccessful. This situation posed imminent threats to workers in the area, and after consultation with the U.S. Fish and Wildlife Service, I went out and killed the bear before a worker could be injured or killed. During the same autumn season, I had to help kill a bear that had taken up residence under a house in the village of Utqiagvik (previously known as Barrow). This was a very large male in prime condition. Part of its prime condition may have been attributed to the fact that its recent activity had been limited to sleeping under a local resident's house by day and feeding on the food caches of local people by night. The attraction of this "artificial" food overcame any of the bear's natural fears of being around people.	Comment noted. As was described on Draft EIS page 3-140, human/bear interactions in the program area are likely to increase as sea ice diminishes and bears spend more time on land in the future. Eliminating access to food and other attractants at industrial sites is a critical aspect of the polar bear interaction plans required under the ITR/LOA process. In addition, specially trained industry personnel have authority to undertake deterrent measures for bears judged to pose a threat to human safety.

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84.	Brook	Brisson	Trustees for Alaska	81368	60	Marine Mammals	Are past impacts of oil field activities understood and applicable? - The DEIS states repeatedly that exploration and development of the Arctic Refuge Coastal Plain region will result in added impacts on the population. Although the DEIS also repeatedly asserts that all impacts from developments will be magnified by ongoing global warming and its associated sea ice decline, it doesn't adequately address the impact of sea ice decline, or other symptoms of global warming, on likely future human/bear conflicts. In 15 years, the numbers of bears spending summer on land has tripled (Atwood et al. 2016) and increasing numbers of bears are loitering around the village of Kaktovik — the only place on Alaska's northern coast where highly nutritious food is predictably available. Numbers of maternal dens and numbers of free-ranging polar bears historically have been higher in the Arctic Refuge area than other parts of Alaska's Arctic where oil and gas activities have occurred. Polar bear/human interactions, Arctic wide, have been increasing as sea ice has declined (Towns et al. 2009, Atwood et al. 2017), and further increases are virtually assured. The "success" of Incidental Take Regulations is cited as assurance that industry operations in the Arctic Refuge will have only "negligible" impact on polar bears. The lessons of the past, even if learned perfectly, simply may not apply in the current situation.	Please see response to letter 81368, comment 42. The new ITRs that must be in place before exploration begins in the program area require a determination of negligible take of the SBS stock of polar bears. As explained in the response to letter 94076, comment 92, increased bear/human encounters associated with industry activity do not automatically mean increased mortality. Please also see the responses to letter 81184, comment 4, and letter 81368, comments 32 and 34.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
85.	Steven	Amstrup	Polar Bears International	81368	62	Marine Mammals	The DEIS acknowledges that as a result of global-warming-induced sea-ice declines, polar bears have had to make longer and more laborious movements from the sea ice to denning areas (3-125). Hence, requiring additional movements to avoid new structures and activities in coastal regions of the Arctic Refuge will compound ongoing negative impacts by requiring more energy drain to accomplish even greater movements. Because polar bears can only become progressively less well-nourished as sea ice continues to decline, added movements during the critical pre-denning time of year are sure to result in increasingly negative impacts. The more energy a female must expend to access, establish, and maintain her maternal den, the less energy she has to give to her cubs. Similarly, forcing the increased number of bears that are spending more time on land and therefore are hungrier, to move around new activities and infrastructure, is almost sure to lead to even greater increases in bear/human conflict situations. The DEIS correctly points out that consequences of these more frequent interactions can be severe, but it offers no suggestions for eliminating those consequences.	Experience over the past 3 decades has demonstrated that the ITR/LOA process under the MMPA, in concert with accompanying BAs and BOs in recent years under the ESA, have provided an effective mechanism to mitigate negative consequences stemming from polar bear/human encounters and conflicts. Appendix J summarizing ITR mitigation measures (as best management practices) has been added to the Final EIS. Please also see response to letter 81368, comment 67.

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86.	Megan	Williams	o.b.o. Trustees for Alaska	81368	63	Marine Mammals	In practice, many oil and gas activities require solidly frozen ground and hence cannot start early enough in winter to precede the time when bears are establishing dens. Also, oil field activities often do not occur at uniform intensity throughout winter, rather they often "ramp up" in intensity after ground is solidly frozen and snow covered. So even though autumn activities might be at a level tolerated by a pregnant bear, the intensity of activities may escalate to non-tolerable levels later in the winter. More important is that even if development activity levels did remain constant through winter and if initiating activities in autumn resulted in a "gentle push" to assure bears didn't den too nearby, ongoing impacts of climate change mean the situation is different.	Comment is correct that most dens are initiated before winter seismic exploration and ice-road/pad construction would be able to commence. The referenced comments by Amstrup (1993) on Draft EIS page 3-136 pertained to female polar bear responses to oil field operational activities that occurred throughout the year. Text has been clarified accordingly in the Final EIS. Den surveys will be required under the ITR/LOA process before activities commence on the ground during the denning season.
87.	Brook	Brisson	Trustees for Alaska	81368	64	Marine Mammals	Under ideal circumstances, there might be minimal impact on females forced to relocate den sites. However, these are not ideal circumstances. Even if it was true in the past that autumn relocation to an alternate den site merely caused annoyance, it is more likely now that serious harm could result from the increased effort to find an alternative den location. Females are already having increased difficulty providing sufficient provisions for their young, and any unnecessary energy drain can only exacerbate ongoing declines in maternal welfare and cub survival.	Comment noted. Female bears seeking winter den sites often dig exploratory holes before selecting a site and movements during the selection process are common. Compared with other portions of the Arctic Coastal Plain west of the Arctic National Wildlife Refuge, the relative abundance of potential denning habitat in the program area may lessen the energetic demands on female bears that are disturbed while attempting to initiate dens, assuming oil and gas reservoirs are found and development occurs.

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88.	Brook	Brisson	Trustees for Alaska	81368	65	Marine Mammals	after describing various impacts, the DEIS does not rationally reconcile the descriptions with its repeated claims that impacts will be negligible. For example, the DEIS claims that “although the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat, the risks are well understood” (3-142) and that mitigation efforts of the past have been effective. Even taken one at a time, each of the possible impacts of Arctic Refuge development cannot be considered negligible. The negative impacts on maternal denning alone are virtually certain to exacerbate the ongoing population decline. Taken together and including the fact that the DEIS repeatedly acknowledges the compounding effects of climate change, a finding of negligible impact is illogical at best and irresponsible at worst.	Section 3.3.5 of the Draft EIS described the threatened listing of polar bears under the ESA as well as the declining status of the SBS stock. Before industry activities can commence in the program area, the ITRs, BA, and BO being developed for the Arctic National Wildlife Refuge will require a negligible impact determination under the MMPA and a no-jeopardy finding under the ESA. These evaluations and determinations by federal agencies in accordance with federal laws are consistent with conservation of the species. The word “negligible” was used 8 times in 7 paragraphs in Draft EIS Section 3.3.5, in two specific contexts: (1) to be consistent with the finding of negligible impact required to authorize incidental take under the MMPA, and (2) to describe effects that would be so minor in magnitude, extent or duration, or so unlikely, that they would have little impact. Examples of the first use (to which the comment is presumed to refer) occur on page 3-125, 3-137, and 3-142. Examples of the second use occur on page 3-135, 3-138, 3-141, and 3-143 (twice in same paragraph). The use of the term in these seven locations have been reevaluated and other terms have been added or substituted in the Final EIS, where warranted, for clarity of meaning.

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89.	Steven	Amstrup	Polar Bears International	81368	66	Marine Mammals	Although the DEIS claims impacts of new developments are well understood, it only states these developments will occur but doesn't address how that understanding will eliminate negative impacts. For example, nearshore infrastructure and the human activities associated with it are likely to displace bears to more inland denning sites that might be less desirable and in which they might be less successful in their reproductive effort. More than 80% of maternal dens found on land by radio-telemetry in the Alaskan Beaufort Sea were within 10 kilometers of the coast and over 60% were right on the coast or on coastal barrier islands (Amstrup 2003). Although there is abundant satisfactory denning habitat farther inland, in the foothills or mountains, this distribution indicates that bears prefer to den near the sea where minimal effort is required to find and enter a den and where they are close to the sea ice hunting habitat when they emerge in spring. Denning close to the sea also may be a way to minimize predation risk. Young cubs are at risk from predation by wolves when they are enroute from the den to the sea ice (Richardson and Andreashek 2006). Females emerging from dens near shore minimize the distance they must travel from the den to get onto the sea ice, reducing both the energy expended and exposure to predation risk.	The importance of coastal habitats to polar bears was described on Draft EIS pages 3-126, 3-133, and 3-134. The amount of infrastructure permitted within 10 km of the coast would vary among the action alternatives, as described in the Draft EIS, with no surface occupancy being allowed within 1–2 miles under Alternatives C and D, except for barge landings/docks, spill response staging, and pipelines, if necessary. The presence of designated critical habitat on barrier islands and coastal spits and the imposition of a 1-mile no-disturbance buffer zone around those features would afford protection to the portions of the coast most heavily used by polar bears. Inland displacement of denning females is a possible response to development near the coast, albeit speculative; no published data are available to support or refute this hypothetical effect. The Draft EIS used the best available data to analyze potential impacts on maternal denning. The protective measures dictated by the required ITR/LOA process will mitigate, but may not entirely eliminate, impacts on polar bears.

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90.	Megan	Williams	o.b.o. Trustees for Alaska	81368	67	Marine Mammals	Concerns about potential obstacles bears face while reaching denning habitat are exacerbated directly by warming-induced sea ice decline, but are neglected in the DEIS descriptions. Increasingly, bears coming ashore to den have had to travel greater distances (DEIS 3-125) including prolonged swims (Durner et al. 2011, Pagano et al. 2012). Greater movement means bears expend more energy to reach denning areas than they did in the past. Some female bears may move around or through the various kinds of infrastructure encountered as they are coming ashore and move to alternative locations. Others that are initially tolerant may find themselves denning near enough to infrastructure and related disturbances that escalating disturbances in winter or spring cause them to leave the denning area sooner than they would have in the absence of disturbance. Whether a bear moves farther inland in autumn than otherwise would have been the case or is disturbed after den establishment by intensifying winter activities, the extra energy required can only compound the negative energy balance many mother bears in the Southern Beaufort Sea currently experience.	Concerns about increased movement and energy expenditure are acknowledged and were described in the Draft EIS on page 3-132. Pagano et al. (2012) has been added as another citation in the first bullet in the list on that page. A sentence describing the efficiency of polar bear locomotion on land has been added farther down on that page, citing Pagano et al. (2018b). Please also see response to letter 81368, comment 64.

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91.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	68	Marine Mammals	Roads and pipeline corridors running parallel to the coast may influence polar bears to deviate from historically preferred pathways to their denning areas. These impacts would not only compromise bears preferring to den on the Arctic Refuge, but also the habitats between Prudhoe Bay and the Refuge. Some of the most frequently used denning habitat in Alaska is found in the coastal area immediately to the west of the Arctic Refuge boundary. Although cumulative effects of development expansion have not been assessed, additional energetic costs must have occurred as bears negotiate them. Therefore, it is hard to imagine additional habitat fragmentation will not require more energetic costs as polar bears are forced by new developments to alter movements and habitat uses.	The Point Thomson, Badami, and Endicott pipelines run parallel to the coastline for most of the distance between the western boundary of the Arctic National Wildlife Refuge and the Prudhoe Bay oil field, yet extensive polar bear movements occur annually along the coastline north of those pipelines as bears move eastward toward Kaktovik. The commenter's reference to the "most frequently used denning habitat in Alaska" is unclear because the terrestrial area between the Canning and Shaviovik rivers contains much less potential denning habitat and fewer documented dens than does the program area or the area west of the Shaviovik River. Flaxman Island has been used heavily by denning polar bears, but that barrier island is just off the coast not far from Point Thomson. northwest of the Canning River delta. ITR reports from the existing oil fields in northern Alaska note that bears commonly move through areas of infrastructure, typically displaying only short-term, localized disturbance, as was described on Draft EIS page 3-138.

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92.	Steven	Amstrup	Polar Bears International	81368	69	Marine Mammals	There are no studies showing that effects of the existing oil and gas developments in Alaska have been directly detrimental to polar bears at the population level. There are reasons, however, why possible negative effects of past developments should not be overlooked. Consider the trajectory of the Southern Beaufort Sea polar bear population. By the mid-1980s, the polar bear population in the Southern Beaufort Sea was robust and recovering from decades of excessive harvest that began in the 1950s (Amstrup 1995, Amstrup et al. 1986). By the late 1990s, however, the population trend had reversed and since then the population has declined by about half (Bromaghin et al. 2016). We are confident that the major contributor to the ongoing population decline among Southern Beaufort Sea polar bears is global-warming-induced loss of the sea-ice habitat upon which polar bears depend for catching their seal prey. Despite the fundamental link between declining polar bear welfare and declining availability of sea ice, we cannot overlook the hypothesis that the expanding human footprint in and near polar bear habitat also may have played a role in contributing to the recent declining trend in Southern Beaufort Sea polar bear numbers. Population declines since the late 1990s have coincided with major expansion of oil exploration and development activities, and the parallels in timing between oil field expansion in Alaska and declining welfare of the polar bear population should at least give pause to the conclusion in the DEIS (3-142) that the risks of development and how to eliminate those risks are "well understood." Even if we did understand past impacts, the Southern Beaufort Sea polar bear population now is severely compromised. And, any additional negative impact needs to be viewed differently than when the population was thriving.	Comment notes correctly that possible contributions of industrial development to the SBS stock decline since the late 1990s are speculative and without any supporting data. Reports for the MMPA ITR/LOA process have provided substantial information on the interactions of polar bears with oil and gas industry activities, incidental take, and on the effectiveness of mitigation measures. Impacts cannot be entirely eliminated, but they can be recognized and mitigated through an adaptive process. While some risks are understood, others may not be as apparent and our understanding of them and how to mitigate them is an evolving process. As that process unfolds, when promulgated, new ITRs will strongly resemble older ones until new information is gained to support improvements. The importance of minimizing incidental take is recognized in the Polar Bear Conservation Management Plan (USFWS 2016).

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93.	Janet	Jorgenson	—	81671	22	Marine Mammals	Issues with avoiding polar bear denning habitat. During future seismic exploration and other winter overland travel, efforts to avoid tundra damage must be weighed against efforts to avoid harassment of polar bears, because the polar bear is now listed as a threatened species under the ESA since 2008. With the current increased concern for polar bears, regulations for winter vehicle travel on tundra should be developed as to whether or not operators should drive up drainages as was done during the 1980s seismic exploration in the 1002 area, as the drainages are prime habitat for polar bear dens because of the snow accumulated in the drainages.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.
94.	Janet	Jorgenson	—	81671	23	Marine Mammals	If the choice is between protecting polar bears and protecting vegetation and soils, the polar bears will take priority. In winter, vehicles should not be allowed to travel along snow-accumulation areas because those are where polar bear dens are most likely to occur (see map in DEIS).	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.
95.	Janet	Jorgenson	—	81671	24	Marine Mammals	I include some text excerpted from the DEIS and other relevant documents that deals with protection of denning habitat for polar bears, to show that it is reasonable to foresee that restrictions on driving on drainages would be warranted and very likely to be applied on winter overland travel: Text from DEIS: 'Under ROP 10, the pre-activity surveys required to locate dens, plus the 0.5-mile and 1-mile buffers for seismic and heavy equipment operation around occupied dens of grizzly and polar bears, respectively'. Under Lease stipulation 5: Objective: Minimize disturbance to denning polar bears, and disturbance or alteration of key river and creek maternal denning habitat areas.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.

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96.	Withheld	Withheld	—	82848	3	Marine Mammals	Additionally the EIS does not fully consider the wildlife impacts of drilling. I am particularly concerned that the EIS does not adequately evaluate the potential impacts of drilling on denning sites for the Southern Beaufort population of polar bears, which is a population in decline. The EIS fails to provide estimates of how potential mortalities associated with leasing activities and development of the region may affect this population.	Please see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4.
97.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	13	Marine Mammals	The claim that 19 polar bears may den in the Program Area annually is also inconsistent with other data included in the DEIS stating 46 polar bears dens have been recorded in the Program Area over a period of 40 years. It does not make sense to ASRC how BLM/FWS can reasonably expect that nearly ½ of the observed dens over a 40 year period may occur in a single year.	New tables have been added to Appendix J of the Final EIS detailing the calculations used to estimate the number of females (20) denning annually in the program area. That number consists almost entirely of unmarked bears, whereas the number of dens found in past years was documented mostly by tracking individual radio-collared bears, which constituted a small proportion of the SBS stock. Hence, the two numbers are not directly comparable and the EIS statements are accurate as written.
98.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	14	Marine Mammals	The SBS stock of polar bears have a large range from Point Hope to south of Banks Island and east of the Ballie Islands, Canada. 17 The same stock of polar bears utilizing the Program Area also move through the areas of industry activity seasonally; this suggests that industry activities in the geographical area will have relatively few interactions with polar bears. 18 It should be clarified in the DEIS that the SBS polar bears do not use the Program Area exclusively as the SBS spends the majority of the year near the coast, moving further offshore in the summer to the pack ice 19 and also frequent industrial areas like Pt Thomson, Badami, Prudhoe Bay, Kuparuk, Alpine, and developed areas east in Canada.	The 2nd paragraph on Draft EIS page 3-124 clearly described the extent of the SBS stock's range, but a phrase has been added stating that the core activity area includes the existing oil fields along the central Beaufort Sea coast. The Draft EIS neither stated nor implied that the SBS stock ranges exclusively in the program area.

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99.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	15	Marine Mammals	While the Coastal Plain is rich in denning habitat, a phone conversation is not an appropriate reference to determine the expected dens annually in the Program Area.	Comment noted. The referenced estimate by USFWS biologist Ryan Wilson has been added to Appendix J, describing the computational procedure and citing supporting data sources.
100.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	16	Marine Mammals	BLM should be clear in the DEIS as to the amount of historic denning sites observed in the Program Area. In several areas, BLM notes that 46 dens have been documented in the Program Area but it is omitted as to the sample years this data was collected, when in fact it was collected over a 40 year period (see pages 3-128 and 3-134 in the DEIS).	Comment notes correctly that the number, years, and source of documented historical dens are described in the final two paragraphs on Draft EIS page 3-128. A footnote has been added to Table 3-22 on Draft EIS page 3-134 to cite the source of the documented dens as the USGS den catalog (Durner et al. 2010).
101.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	17	Marine Mammals	FWS conducted a FLIR survey in the Coastal Plain in the winter of 2018 which should be included in the DEIS. The preliminary results, according to FWS, were that FWS detected five dens. Of that total, one had been abandoned prior to use, two were confirmed polar bears dens, and two were fox dens. ASRC was encouraged by these results as it provides clear insight into how polar bears are using the Coastal Plain for denning, and gives a degree of confidence on the efficacy of FLIR Surveys as they were successful in identifying even fox dens.	The 2018 FLIR survey was cited on Draft EIS page 3-129. Additional language regarding the effectiveness of FLIR surveys has been added to the text of the Final EIS.

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102.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	18	Marine Mammals	Through Traditional Knowledge, we understand that polar bears and terrestrial mammals like caribou are inherently mobile and their use of their habitat can vary widely. As the Arctic experiences a changing climate, ASRC cautions BLM from relying squarely on habitat mapping to define restrictions as it may not be meaningful each season. For this reason, BLM should strike the reference to a three-dimensional spatial model (DEIS page 3-128) to predict the occurrence of denning habitat. Again, while this may be useful in simply mapping habitat, it provides little value in predicting where bears may den, and is too broad to provide useful data. This method has not been sufficiently tested and should not be included in the DEIS.	The best available data indicate that polar bear maternal dens must be excavated in snow drifts, which form seasonally in bank habitats where the topography is conducive to the capture and persistence of snow drifts. The physical characteristics of such bank habitats have been well-described and mapped using several comparable methods, as described in published papers cited in the Draft EIS. The 3D spatial model compares favorably with results obtained from mapping by interpretation of aerial and satellite imagery and by interferometric synthetic-aperture radar, suggesting that it will be another useful tool for identifying potential maternal denning habitat, if adequate meteorological data are available.
103.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	19	Marine Mammals	Through the robust mitigation measures established by the NSB, FWS, and BLM, impacts to polar bears have been negligible from resource development activities for decades. The FWS Incidental Take Regulation have successfully minimized impacts to polar bears from oil and gas activities on and offshore: "Since 1993, the documented impacts of incidental take by Industry activity in the Beaufort Sea ITR region affected only small numbers of bears, were primarily short-term changes to behavior, and had no long-term impacts on individuals and no impacts on the SBS polar bear population, or the global population." While the FWS Beaufort Sea ITR do not include the Program Area, the monitoring and permitting encompasses a much larger geographic area, manages the same stock of polar bears, and	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

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104.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	20	Marine Mammals	Oil and gas exploration, development, and production activities do not threaten the polar bear species throughout all or a significant portion of its range. Key to this conclusion is the fact that industry presence impacts a very small amount of the habitat for the SBS polar bears. 22	Extending oil and gas exploration, development, and production into the program area would represent a substantial expansion of the North Slope area open to such activities. The program area receives disproportionate use by denning females of the SBS stock and is experiencing increasing use by other sex and age classes as sea ice diminishes, raising concerns about potential effects on the SBS stock.
105.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	21	Marine Mammals	BLM should modify their text which implies polar bears could be at risk of collision with industry vehicles (DEIS pg 3-140). This was evaluated in the Pt. Thomson EIS and concluded that "Available data do not provide documentation of any incidental collisions of polar bears with such vehicles." 23 The legacy of development on the North Slope and offshore should not be disregarded when discussing potential impacts to polar bears from industry activity and needs to be included in the DEIS. In fact, "The vast majority of reported polar bear observations have been of polar bears moving through the oilfields, undisturbed by the Industry activity." 24	The Draft EIS statement is accurate as written. Vehicle strike is a risk for polar bears moving across roads while transiting between the ocean and onshore denning areas, but it has low probability and the impact is identified on page 3-141 as being negligible. The density of terrestrial dens in the program area is substantially greater than in the oil fields farther west and the occurrence of polar bears onshore is increasing as sea ice diminishes, so the risk is likely to be higher in the program area.
106.	Matt	Krogh	Stand.earth	83321	18	Marine Mammals	The endangered population of Southern Resident Killer Whales, already at risk from vessel traffic, should be considered threatened by continuing and possibly increasing oil tanker traffic from TAPS due to increased oil supply from the Arctic Refuge.	The range of Southern Resident Killer Whales has its core in the Salish Sea of Washington/British Columbia and extends from California to Southeast Alaska. This range does not overlap with the project area, which includes a shipping corridor from Dutch Harbor to Camden Bay.

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107.	Withheld	Withheld	—	83331	3	Marine Mammals	Likewise, the DEIS acknowledged its own proposed action alternatives could cause injury or death to polar bears and would affect large areas of polar bears' Critical Habitat. However, BLM failed to identify and analyze sufficient mitigation measures to protect the bears nor did it identify how many bears could be impacted or how impacts would affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to current ITRs in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS page 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts to polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

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108.	Withheld	Withheld	—	83335	1	Marine Mammals	Alternatives B, C, and D would affect critical polar bear habitat. DEIS Vol.1 p.3-125 states that there are currently approximately 900 Southern Beaufort Sea polar bears and that the population has declined almost 50% in the last 30 years. Vol.1, p. 3-133 says polar bear critical denning habitat constitutes 77% of the program area. The DEIS Vol.1, p. 3-142 acknowledges that the "potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat." How can we allow exploration and drilling knowing it could have these effects?	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to current ITRs in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts to polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
109.	Withheld	Withheld	—	83461	2	Marine Mammals	All of the action alternatives would affect large areas of polar bear critical habitat. There are only 900 Beaufort Sea polar bears, all suffering from man-caused climate change. Continued loss of sea ice from global warming, will bring more bears to land to den, and currently their den sites are disproportionately in the high hydrocarbon potential zones.	Comment noted. All of these points were described in Draft EIS Section 3.3.5.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
110.	Withheld	Withheld	—	83752	1	Marine Mammals	This is critical habitat for polar bears listed as threatened under the Endangered Species Act. Your analysis is inadequate as to how to mitigate activities which would harm this Threatened species.	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts to polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
111.	Harold	Spence	—	84230	3	Marine Mammals	The BLM acknowledges it expects to cause injury or death to polar bears, but doesn't analyze how many would be affected, or what effect that would have on the struggling population.	Draft EIS p. 3-140 noted "the possibility for increased bear injuries or deaths" (not a certainty) and then discussed the effectiveness of the ITR/LOA process and associated mitigation at minimizing injury and mortality. Please also see response to letter 81368, comment 32.
112.	Withheld	Withheld	—	84900	2	Marine Mammals	The DEIS fails to address as well the cumulative effects of long-term human activities on a wild natural ecosystem, as well as explaining how the industry will clean up the water needed so it doesn't destroy the already-lessening fisheries that feed whales, seals, and other marine life in the arctic offshore from such an industrial complex	The cumulative effects of oil and gas development, commercial transportation, subsistence harvest, activities of local communities, management and research actions by federal and state agencies, and tourism were described under Cumulative Impacts (Draft EIS pages 3-148 and 3-149). Site-specific spill response plans will be required for each post-leasing development proposal.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
113.	Withheld	Withheld	WWF-Canada	85059	14	Marine Mammals	In addition, the draft EIS must assess the potential resulting impacts on mothers and their offspring from such displacement. The draft EIS also must analyze what effects changing trends in snow depth, rainfall, wind drifting, and timing of snowfall in the Arctic Refuge could have on denning disturbance from seismic testing. Disturbance may lead to females and cubs abandoning dens before the cubs are ready to leave. Very small cubs cannot survive outside the den. The amount of time spent before mothers and cubs first emerge has been correlated with cub survival, and shorter denning periods correlates with higher cub mortality. BLM must confront these critical issues in a revised draft EIS by filling in the substantive gaps in missing information required for meaningful analysis, and explaining to the public how it will address them.	Information on polar bear habitat use, feeding, denning, and population distribution was described in Draft EIS Section 3.3.5, Affected Environment. Seismic exploration of the program area will be the subject of a separate NEPA analysis, requiring the development and approval of new ITRs under the MMPA to cover Arctic National Wildlife Refuge lands, including a separate Biological Assessment and Biological Opinion. The Draft EIS described maternal denning habitat, including a map (Appendix A, Figure 3-24) showing the distribution of potential denning habitat in the program area, and the mitigation measures used to locate and protect occupied dens. A geospatial model to predict the distribution of snow drifts suitable for denning is available and was cited (Liston et al. 2015) in the Draft EIS, but the needed data are not yet available for the program area (i.e., a data-collection network of meteorological stations has not yet been established).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
114.	Withheld	Withheld	WWF-Canada	85059	17	Marine Mammals	Moreover, disturbances of maternal dens that result in potentially lethal outcomes for adult females and cubs may have population-level impacts on the already stressed Southern Beaufort Sea subpopulation. Such an outcome would be in direct conflict with mandated actions in the U.S. Fish and Wildlife Service (FWS) Polar Bear Conservation Management Plan, which states that protecting maternal denning habitat is critical to recovering the Southern Beaufort Sea subpopulation. Such an outcome would also be in direct conflict with the Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea, which prohibits disturbance of dens and hunting of family groups, and with the ESA, which requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary. Section 9 of the ESA makes it unlawful for any person—including private and public entities hired to conduct seismic surveys—to “take” individuals of an endangered species and, by regulation, a threatened species. BLM cannot engage—or permit others to engage—in activities that will result in unauthorized incidental take of listed species. Throughout its analysis, BLM improperly relies on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears. The agency fails to state that such ITRs would be required for this leasing program, nor does the draft EIS explain BLM's assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities.	Post-leasing activities post-leasing in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS summarizing ITR mitigation measures. Experience over the past 3 decades has demonstrated that the ITR/LOA process under the MMPA, in concert with accompanying BAs and BOs in recent years under the ESA, have provided an effective mechanism to mitigate negative consequences stemming from bear/human encounters and conflicts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
115.	Withheld	Withheld	WWF-Canada	85059	18	Marine Mammals	The BLM must issue a revised draft EIS to address these issues. The February 5, 2019, announcement by United States Interior Department officials that seismic exploration will not be conducted this denning season provides BLM with additional time to revise the draft EIS to examine the full range of potential impacts from all phases of oil and gas activities, including pre-lease seismic and post-lease exploration.	Appendix B describes the seismic exploration associated with the hypothetical development scenario analyzed in the EIS.. Seismic exploration can be done across the full extent of the program area, not just the area available for lease. Site-specific NEPA analysis will be conducted for proposed seismic exploration. Site-specific NEPA analysis will need to be done for any proposed seismic exploration, which will include analyzing potential impacts on polar bears. The range of impacts predicted for polar bears is discussed in Section 3.3.5 of the Final EIS.
116.	Withheld	Withheld	WWF-Canada	85059	25	Marine Mammals	Vessel traffic poses three primary risks to polar bears, whales, and other marine mammals and wildlife in the Arctic-oil and hazardous substance spills, noise, and ship strikes. These risks and associated impacts are not adequately analyzed in the draft EIS and should be given substantially greater attention in a revised draft EIS.	These 3 factors are the primary focus of impacts discussed in Section 3.3.5 on pages 3-135 to 3-143 of the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
117.	Withheld	Withheld	WWF-Canada	85059	33	Marine Mammals	The draft EIS section on ship strikes should be completely revised. BLM's conclusion that ship strikes of whales and seals would be "unlikely" is based in large part on the assumption that vessel traffic would be traveling slowly, i.e., at less than around 10 knots. There is presently nothing in the leasing stipulations or ROPs, however, generally requiring ships to adhere to a 10-knot speed limit. The revised version needs to present a more realistic, scientifically-based analysis of the risk and impacts, including at individual and population levels, of vessel strikes based on overlap of whale habitat with shipping routes and the actual speeds at which vessels are expected to travel, both within or near the program area and along the marine barge route. Even if a speed limit is added in certain areas as a required and enforceable mitigation measure, revision of the analysis would still be needed. This is especially important given that worldwide records of ship strikes on whales show that all large whales are at risk, particularly right whales and bowhead whales, and ship strikes can significantly affect small populations of whales. Additionally, the draft EIS's reliance on the absence of records or evidence of ship strikes to conclude that strikes are unlikely is not satisfactory because ship strikes are grossly underreported.	The 10-knot speed is a reasonable standard and would align with other practices across the North Slope. Additional restrictions will be analyzed on a project-specific basis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
118.	Withheld	Withheld	—	87645	3	Marine Mammals	How many polar bears are using the Coastal Plain for denning to have their cubs? How many more polar bears may be expected to use the area for denning and giving birth to cubs as sea ice continues to be less reliable? How is seismic work going to impact denning polar bears?	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to ITRs currently in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	5	Marine Mammals	The DEIS acknowledged that the proposed action alternatives could cause injury or death to polar bears and would affect large areas of polar bear Critical Habitat. However, BLM failed to identify how many bears would be impacted and how the impacts to these bears would affect this threatened species. BLM also failed to identify and analyze sufficient mitigation measures to protect the bears.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to ITRs currently in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

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120.	Withheld	Withheld	—	92034	6	Marine Mammals	Polar Bears: 77% of The Arctic Refuge Coastal Plain is designated Critical Habitat for Polar Bears, which are listed as threatened under the Endangered Species Act. The Southern Beaufort Sea population of polar bears, which den on the Coastal Plain of the Refuge, have lost about half their population since 1980. Nearly one third of these bears depend on the Coastal Plain to den and give birth to their cubs. This area of the Refuge is one of the world's largest polar bear denning sites. The DEIS acknowledged that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to ITRs currently in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
121.	Withheld	Withheld	—	92067	1	Marine Mammals	The DEIS has not identified the number of Polar Bears that would be impacted, including particularly the denning sites and concern over the steep decline in their population since 1980. This decline due in part to the warming of the Arctic Ocean and the diminishing of ice needed by the bears. The BLM did not identify or determine mitigation measures to protect the bears that are listed as threatened under the Endangered Species Act.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to ITRs currently in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
122.	Withheld	Withheld	—	92581	5	Marine Mammals	Similarly, the DEIS acknowledges that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. Again, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to ITRs currently in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.
123.	Withheld	Withheld	Government of the Northwest Territories	92862	35	Marine Mammals	Comment(s) - Polar bear critical habitat under the Endangered Species Act is defined as 20 miles inland from the coast, all barrier islands with a buffer of 1 mile and the sea ice. Alternative D, the most conservative, the No-Surface-Occupancy (NSO) is only applicable to within 5 miles of the coast and not the 20 miles as defined by the ESA. Recommendation - The GNWT recommends the BLM ensure the NSO defined for polar bear critical habitat in Alternative D is consistent with that defined in the other alternatives described in the EIS.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
124.	Withheld	Withheld	Government of the Northwest Territories	92862	74	Marine Mammals	The draft EIS recognizes the recent increased use of the program area for denning bears from the Southern Beaufort Sea subpopulation. The draft EIS also mentions incidental take regulations in the western side of Alaska and a number of required operating procedures (ROPs) specifically aimed to mitigate impacts on polar bears but the evidence of the effectiveness of these mitigations is inadequate. The draft EIS also lacks traditional knowledge on polar bears where it exists, examples include: · Joint Secretariat 2015 6; · Voorhees et al. 2014 7 · Braund et al. 2018 8. The draft EIS fails to adequately recognize the shared nature of this resource with Canadian users and assess the potential impacts of the different alternatives on polar bears and their subsistence use by both Inupiat and Inuvialuit. Data exists to allow the completion of a modeling exercise could be completed to look at the different alternatives and the potential impacts to polar bears and the critical habitat as identified under the US Endangered Species Act. Recommendation: The GNWT recommends the BLM conduct additional spatial analysis of the impacts of the different alternatives on polar bears and the users of bears.	Draft EIS Section 3.3.5 described the low number of lethal takes and the effects of short-term, localized behavioral disturbance associated with Alaska oil and gas activity under the previous and current ITRs, indicating the effectiveness of mitigation under the ITR/LOA process. In addition, the ITRs require that activities conducted by permittees under LOAs must not have unmitigable adverse impacts on Native subsistence uses, and must be coordinated with subsistence user groups. Regarding this spatial modeling request, please refer to the response to letter 94076, comment 81.
125.	Lisa	Jodwalis	—	94072	1	Marine Mammals	Adverse impacts of oil and gas exploration and development on wildlife were inadequately addressed, specifically: - polar bear denning sites, which occur onshore in the 1002 Area in greater density than other areas of the North Slope, especially consideration of disturbance to these sites or their subsequent abandonment or avoidance by polar bears;	All of these points were described in Draft EIS Section 3.3.5.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
126.	Amy	Law	Government of Yukon	94076	70	Marine Mammals	The Southern Beaufort subpopulation of polar bears—a transboundary subpopulation shared between the United States and Canada—is likely one that will be most impacted by the loss of sea ice due to global climate change (Durner et al. 2009, Hunter et al. 2010, Regehr et al. 2016). As such, activities that threaten the persistence of polar bears ought to be clearly identified and avoided or mitigated to ensure that populations are not further impacted by humans. Human activities that may affect the survival and reproduction of polar bears have the potential to impact the persistence of this local population through cumulative effects that may be difficult to fully predict or mitigate.	The portions of Draft EIS Section 3.3.5 on polar bears described threats to the SBS stock, with supporting citations (including those cited in the comment), and the USFWS management options available to realistically address those threats. Avoidance and mitigation measures are specified through the MMPA process, before exploration and development activities related to leasing can occur. Please also see responses to letter 81184, comment 4, and letter 81368, comments 32 and 34.
127.	Amy	Law	Government of Yukon	94076	71	Marine Mammals	The Arctic National Wildlife Refuge is an increasingly important area for polar bears of the Southern Beaufort subpopulation (Durner et al. 2006, Fischbach et al. 2007). A large percentage (77 percent) of Coastal Plain Oil and Gas Leasing Program occurs on lands identified by the US Fish and Wildlife Service as critical denning habitat for polar bears (see Map 3-24). Therefore, development in the 1002 lands of the Arctic National Wildlife Refuge has great potential to affect the status of the Southern Beaufort subpopulation. This is particularly evident when considering the increasing use of the area by large congregations of these bears (Wilson et al. 2014, Miller et al. 2015), and the cumulative effects they are likely to face by sea ice loss and development in their critical habitat. Given the potential effects of the leasing program on polar bears in the 1002 lands (e.g., Amstrup 1993, Durner et al. 2006), a clear and comprehensive assessment of the potential impacts to the Southern Beaufort polar bear subpopulation is a prerequisite to development.	All of these points were described in Draft EIS Section 3.3.5. Please also see responses to letter 75904, comment 20; letter 81368, comment 32; and letter 96216, comment 6.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
128.	Amy	Law	Government of Yukon	94076	72	Marine Mammals	While the draft EIS correctly notes that the Porcupine caribou herd is a shared resource between the United States and Canada, there is no similar recognition that polar bears are as well. Important international agreements on the conservation of polar bears exist, yet these are not discussed in Section 1.9, and are only rarely noted in the rest of the draft EIS (although they are listed in Appendix D). Moreover, given that polar bears in the Coastal Plain Oil and Gas Leasing Program area are a part of a shared subpopulation it is surprising that neither their legal status in Canada, nor the Canadian management plan that includes the Southern Beaufort Sea subpopulation (Joint Secretariat 2017), is mentioned or taken into consideration in the draft EIS.	Text has been added to Section 3.3.5: "The SBS stock is a shared resource and is managed by both the U.S. and Canada (USFWS 2016; Joint Secretariat 2017)."
129.	Amy	Law	Government of Yukon	94076	73	Marine Mammals	A supplemental EIS needs to explicitly recognize the 1973 Agreement on the Conservation of Polar Bears and their Habitat, signed by all range states for the species-including the United States-in Section 1.9. The agreement provides provisions for the protection of polar bears from over harvest and habitat destruction (Prestrud and Stirling 1994). Specifically, Article II of the agreement states that: "Each Contracting Party shall take appropriate action to protect the ecosystems of which polar bears are a part, with special attention to habitat components such as denning and feeding sites and migration patterns, and shall manage polar bear populations in accordance with sound conservation practices based on the best available scientific data." A supplemental EIS must explicitly outline measures that will ensure that the proposed Coastal Plain Oil and Gas Leasing Program is not in contravention of Article II of the agreement, particularly with respect to denning sites.	BLM is complying with international agreements between the U.S. and Canadian governments. Text has been added to Appendix D and to Chapter 1.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
130.	Amy	Law	Government of Yukon	94076	74	Marine Mammals	The legal status of the Southern Beaufort Sea subpopulation as a species of Special Concern under Canada's Species at Risk Act should also be acknowledged.	Additional text has been inserted in Section 3.3.5 under Polar Bear, Species Status.
131.	Amy	Law	Government of Yukon	94076	75	Marine Mammals	A supplemental EIS also needs to more explicitly acknowledge the 1988 Agreement between the Inuvialuit and the Inupiat on Polar Bear Management in the Southern Beaufort Sea, which is a user-to-user agreement on the conservation of polar bears specific to the Southern Beaufort subpopulation. This model international agreement between Aboriginal People in Canada and the United States largely focuses on harvest quotas within and between the two nations, and highlights the cultural significance of this shared subpopulation to people in both countries (Brower et al. 2002). This international agreement needs to be specifically referenced in Section 1.9. More pointedly, however, the draft EIS fails to note how incidental take regulations may impact polar bear hunters in either nation.	BLM is complying with international agreements between the U.S. and Canadian governments. Text has been added to Appendix D and to Chapter 1.
132.	Amy	Law	Government of Yukon	94076	76	Marine Mammals	Polar bears have been assessed as a species of Special Concern in Canada (Peacock et al. 2011), and are listed in Canada's Species at Risk Act. The legal status of the Southern Beaufort subpopulation in Canada needs to be acknowledged in the EIS. Similarly, there is no mention in the draft EIS of the 2017 Inuvialuit Settlement Region Polar Bear Joint Management Plan (Joint Secretariat 2017). This subpopulation-level management plan was developed by Inuvialuit and the relevant co-management councils, and should be acknowledged in the EIS.	Text has been added to Section 3.3.5: "The SBS stock is a shared resource and is managed by both the U.S. and Canada (USFWS 2016; Joint Secretariat 2017)."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Amy	Law	Government of Yukon	94076	77	Marine Mammals	It is important to acknowledge that polar bears in the 1002 lands are a shared population with Canada. Moreover, it is important to explicitly address how proposed development in the 1002 lands can be consistent with the management and conservation of this shared polar bear subpopulation in Canada.	. The BLM is complying with international agreements between the U.S. and Canadian governments
134.	Amy	Law	Government of Yukon	94076	80	Marine Mammals	A major shortfall is that the draft EIS fails to consider what the impacts may be to polar bears as a result of development of the Coastal Plain. Rather, the focus in the draft EIS is primarily on how to mitigate for potential impacts. While the mitigation of anticipated impacts is important, the Government of Yukon requests a larger consideration to explicitly address what the predicted impacts of Alternatives A to D are on the polar bear population and the communities that depend on them.	The Draft EIS analysis of impacts under the action alternatives was necessarily general because no specific development actions are being proposed, other than which portions of the program area would be open or closed to leasing and various types of post-leasing activities and which protective stipulations and ROPs would be enforced in those areas. Description of the potential effects of seismic exploration have been added to the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135.	Amy	Law	Government of Yukon	94076	81	Marine Mammals	Without providing a quantified impact associated with the predicted effect of each proposed alternatives it is difficult to objectively assess the proposals put forth in the draft EIS. This deficiency makes it impossible to assess questions such as: What is the predicted impact of Alternative B compared to Alternative D on the Southern Beaufort subpopulation of polar bears? Answers to such questions are vital prior to proceeding with development on the Coastal Plain.	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

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136.	Amy	Law	Government of Yukon	94076	82	Marine Mammals	A suggested approach to overcome this shortfall in the draft EIS is to develop mathematical models of the potential impact of the various leasing alternatives on the polar bear population size and trend. Such models should explicitly examine the impacts of various leasing scenarios on the size, structure, and demography of the polar bear population. These models need to also consider the future viability of the population under various proposed scenarios and include a measure of confidence.	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
137.	Amy	Law	Government of Yukon	94076	83	Marine Mammals	It cannot be emphasized enough that a modeling exercise needs to address the cumulative impacts of the leasing program on the polar bear population. That is, losses due to disturbance of denning females, loss of denning habitat, or bears killed in human-bear conflicts, for example, must be considered simultaneously in the models.	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
138.	Amy	Law	Government of Yukon	94076	84	Marine Mammals	Given the dynamic socio-ecological nature of the region it will be hard to predict precisely what the impact to polar bears may be for each alternative proposed. For such models to be informative for decision-making, they should provide a range of scenarios under each alternative. For instance, the number of denning females disturbed may range widely depending on how many den in the area, which itself is dependent on sea ice conditions. To account for this, the model for each alternative needs to consider historic or present conditions as well as future conditions under climate change scenarios.	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
139.	Amy	Law	Government of Yukon	94076	85	Marine Mammals	The amount of scientific information that has been amassed in the past 40 or so years for the Southern Beaufort Sea polar bear subpopulation is perhaps greater than that for any other subpopulation. Additionally, there is an even greater wealth of Traditional Knowledge about bears in this subpopulation in both Canada and Alaska. This knowledge, as well as the expert opinion of local scientists and hunters, should be harnessed to develop models to explicitly assess the potential impacts of the leasing program on polar bears. Several population models already exist for this subpopulation (e.g., Regehr et al. 2017), and a recent model for the neighbouring Chuckchi Sea subpopulation is informative in terms of integrating scientific and Traditional Knowledge (Regehr et al. 2018).	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
140.	Amy	Law	Government of Yukon	94076	86	Marine Mammals	Even though Alternative D is the best of the three Alternatives considered in the draft EIS, it provides only limited protection of denning habitat. Maps 2-6 and 2-8 in Appendix A of the draft EIS clearly show that Lease Stipulation 5 covers only a small portion of the identified critical denning habitat that has been identified by the United States Fish and Wildlife Service (see Appendix A, Map 3-24). Our calculations indicate that Lease Stipulation 5 applies to less than 9 percent of the identified critical habitat of polar bears in the lease program area. This is insufficient, particularly because bears may be increasingly relying on denning areas on land in the 1002 lands. It is unclear why Lease Stipulation 5 would apply to only within 5 miles of the coast when Map 3-24 (see Appendix A) clearly shows denning areas identified by Durner et al. (2006) much further inland. In our view, polar bear den sites and denning areas should be subject to no surface occupancy and timing limitation restrictions regardless of where they occur within the identified critical habitat. That is, 100 percent of the identified critical denning habitat within the leasing program area should be subject to Lease Stipulation 5.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
141.	Amy	Law	Government of Yukon	94076	87	Marine Mammals	A further concern the Government of Yukon identifies with Lease Stipulation 5 is that the no surface occupancy and timing limitation restrictions apply to only within 1 mile of polar bear dens. Notwithstanding the anecdotal observations provided by Amstrup (1993) of disturbance to habituated bears in Prudhoe Bay, there is no scientific basis to suggest that polar bears not habituated to humans can successfully den in such close proximity to development activities. The Government of Yukon requests stronger evidence to suggest that 1 mile is sufficient to not damage or destroy denning habitat, or disturb denning females. In the absence of further evidence to support the 1 mile threshold, we suggest a more precautionary approach that creates significantly larger buffers around dens to ensure that denning habitat remains functional to polar bears and ensures that denning females are not disturbed. Expert knowledge by polar bear scientists and local Iñupiat and Inuvialuit is one approach to developing a more defensible buffer around dens for the application of Lease Stipulation 5.	The 1-mile buffer is not specific to Lease Stipulation 5. Rather, the 1-mile buffer is stipulated by the current ITRs around occupied maternal dens and also is central to the no-disturbance buffer zone surrounding the barrier islands unit of designated critical habitat. The USFWS based the radius of this buffer on behavioral observations of polar bears in Svalbard, as explained on Draft EIS p. 3-137. The potential destruction (direct loss) of potential denning habitat will be addressed in future NEPA evaluations of specific development proposals involving gravel mining and placement of construction of roads and pads.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
142.	Amy	Law	Government of Yukon	94076	88	Marine Mammals	A final consideration pertaining to Lease Stipulation 5 is that the science of locating polar bear denning habitat remains in its infancy and requires further research and development. This is notwithstanding the promising results from recent studies on the Coastal Plain (Durner et al. 2001, 2103, Amstrup et al. 2004, Liston et al. 2016). The Government of Yukon is concerned that it will be difficult to protect polar bear denning areas using Lease Stipulation 5 if we cannot yet adequately identify these areas in the leasing area. As such, we encourage a very liberal determination of polar bear denning habitat and the application of Lease Stipulation 5 until our knowledge of polar bear denning habitat matures and we can more reliably locate dens ahead of development.	As acknowledged by the commenter, maternal denning habitat has been well-described and mapped in northern Alaska using multiple methods (as cited in the Draft EIS and the comment). Additional research is unlikely to produce significant new understanding of the terrain characteristics that trap and sustain sufficient drifts to support denning through winter. The presence of these habitat characteristics provides the basis for targeted surveys using repeated surveys with airborne FLIR, which currently is the best available technology for locating dens.
143.	Amy	Law	Government of Yukon	94076	90	Marine Mammals	Required operating procedures (ROP) 10, 15, 34, and 42 in the draft EIS aim to further protect the destruction of polar bear denning habitat or avoid human disturbance to wildlife in the leasing program area. These are important. The Government of Yukon suggests that ROP 34 should explicitly state no landing of aircraft within 1 mile of potential polar bear denning areas during the timing limitations identified in Lease Stipulation 5 (i.e., 30 October to 15 April). This change would ensure that denning females and their dependent cubs are not disturbed by aircraft landing near their dens.	No changes made as this request is already incorporated into, and implied under, ROP 10. All operators will be subject to regulations and stipulations under the ESA and MMPA and all operators are required to comply with federal laws regardless of permit requirements. Explicitly, if dens are known, based on ROP 10, no activity, such as aircraft landing or airstrips, will be located within 1 mile of a known polar bear den.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
144.	Amy	Law	Government of Yukon	94076	91	Marine Mammals	In summary, the draft EIS falls short of providing effective and defensible protection of critical polar bear denning habitat and denning polar bears. These deficiencies need to be addressed in a supplemental EIS to ensure that critical habitat for polar bears is conserved in light of development in the leasing program area. The Government of Yukon strongly suggests the development of additional alternatives that protect more identified critical habitat than Alternative D. Additionally, Lease Stipulation 5 needs to be revisited to further examine the suitability and defensibility of 1 mile buffer around den sites.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
145.	Amy	Law	Government of Yukon	94076	92	Marine Mammals	The draft EIS dismisses the number of bears that may be killed as a result of conflicts with humans in the leasing program area as a trivial number. This is a major failing. Historic numbers of bears killed in defence of life or property in the southern Beaufort Sea are likely not a reliable indicator of how many may be taken in the future due to such conflicts. Polar bears in the Beaufort Sea are spending increasingly more time on land (Schliebe et al. 2008, Atwood et al. 2016a,b, Wilson et al. 2017) and are in worse health (Rode et al. 2015, Whiteman et al. 2018) then in the recent past, therefore, it stands to reason that more bears may encounter human developments, perhaps in search of human sources of food. This will almost assuredly result in greater conflicts with people.	The increasing likelihood of polar bear/human encounters was described in Draft EIS Section 3.3.5, but it does not automatically follow that mortality will increase accordingly, judging from the low frequency of mortalities associated with Alaska oil and gas industry activity since the 1960s. That experience suggests that the number of industry-related mortalities that may occur from leasing in the program area are likely to be orders of magnitude lower than the direct removal of bears from the SBS stock through human harvest. The MMPA ITR/LOA process has been highly effective at reducing mortality over the last 3 decades in which it has been in effect, as has the separate authorization of intentional take through deterrence of bears that pose a human safety threat by specially trained personnel. Please also see response to letter 81368, comment 32.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
146.	Amy	Law	Government of Yukon	94076	93	Marine Mammals	While the emphasis on the reduction of human-polar bear conflicts through ROPs 1 and 4 is noteworthy, these procedures are operational in nature and the draft EIS does not address what the potential impacts of incidental take of polar bears as a result of the leasing program may be. That is, the key questions from an impact assessment perspective are largely not acknowledged or addressed in the draft EIS. The key questions that should be asked in the EIS process need to focus on how would the predicted incidental take polar bears as a result of the leasing program affect the overall population size and structure, as well as the subsistence harvest quota by Inuvialuit and Iñupiat hunters.	Please see responses to letter 81184, comments 4 and 8; letter 81368, comments 32 and 34; and letter 94076, comment 92.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
147.	Amy	Law	Government of Yukon	94076	94	Marine Mammals	A suggested approach to address the predicted impact of incidental take on polar bears and the communities that depend upon them is to undertake a population modeling exercise that explicitly considers a range of bears that may be killed due to conflicts in the leasing program area. Analyses need to consider minimum and maximum estimated number of bears lost to incidental take because sea ice loss will likely affect the number of bears killed to an unknown extent. The model should predict the outcome on the status (size and trend) of the southern Beaufort Sea subpopulation under different scenarios, with the number of bears killed as incidental take forming the various scenarios. An example of such an approach already occurs for this population of bears, albeit in a slightly different context (see Regehr et al. 2017). A supplemental EIS should provide a modeled, predicted impact of human-polar bear conflicts as a result of the leasing program on the status of the population as well as the harvest quota for local communities. From such models thresholds for considering various management interventions can be planned and implemented as necessary.	The general nature of the impact analysis (as described in the response to letter 94076, comment 80) does not allow geospatially explicit quantification of demographic impacts on the SBS stock of polar bears. There are simply too many unknowns to support a realistic modeling exercise at this stage. The Draft EIS assessed the degree of impacts among action alternatives by quantifying the amount of potential denning habitat and the number of historical maternal dens that occur in the areas subject to different leasing restrictions, stipulations, and ROPs under each action alternative. Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
148.	Amy	Gulick	—	94077	4	Marine Mammals	4) All of the action alternatives will affect large areas of polar bear critical habitat. The draft EIS acknowledges that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat.” And yet, there is not estimate of the number of bears that could be killed, injured, or displaced by the leasing process or seismic testing.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
149.	Alice	Levine	—	94086	7	Marine Mammals	A seawater treatment plant is assumed and envisioned in the DEIS, but the DEIS also notes that this increases the cost for development, and this infrastructure would require a road and seawater transport pipeline. A water treatment plant would have environmental impact on the Arctic Coastal Plain as it would have to be placed in critical denning habitat for polar bears; any facilities constructed within 20 miles of the coast would be located in that critical habitat unit. Endangered polar bears are critically threatened by climate change. The DEIS does not address how the United States will honor the international Agreement on the Conservation of Polar Bears.	Correct; a seawater treatment plant is part of the hypothetical development scenario described in the Draft EIS, along with other pads, roads, and pipelines under the 2,000-acre limit of surface development. The occurrence of critical habitat designated for polar bears was described and mapped (Map 3-24) in the Draft EIS. The U.S. pursues conservation measures for the polar bear under regulatory procedures established under both the MMPA (i.e., the ITR/LOA process) and the ESA (Section 7 consultation, including BAs and BOs), as described in the Draft EIS. The BO for any industry activities associated with the leasing program must evaluate whether the proposed actions would cause destruction or adverse modification of designated critical habitat.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
150.	Tim Lydon	Girdwood	—	94096	1	Marine Mammals	I vehemently oppose oil drilling in the Arctic Refuge. There is no safe or moral way to do the lease sales. The displacement and threats to polar bears is too dangerous as they're already struggling with the disappearance of ice. Of particular concern is denning females, which are inadequately addressed in the DEIS.	Maternal denning was described in Section 3.3.5, Draft EIS pages 3-129 to 3-131, and potential effects of leasing on denning females were described on Draft EIS pages 3-133 to 3-135 and 3-136 to 3-138.
151.	Kenyon	Meyer	—	94105	17	Marine Mammals	The increased use of terrestrial habitats in the project area, due to loss of sea ice, make this an especially important area worthy of extraordinary protection. Oil and gas development specifically are among the threats to polar bears explicitly recognized in the Polar Bear CMP. 109 This is, in part, due to compromising potential denning sites. 110 Coincident with these threats, polar bears in the area are using onshore dens with greater frequency than ever. 111 The minimum range of these animals is 2,805 square miles. 112 Yet, even the most aggressive mitigation alternative in the DEIS (e.g., NSO within one mile of dens) fails to establish buffers that are adequate to ensure against den abandonment. The one-mile buffer is particularly absurd given the coastline, and 20 miles inland, has been designated as critical habitat under the ESA. 113	Please see responses to letter 94076, comment 87, and letter 81368, comment 34.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
152.	Withheld	Withheld	—	94435	2	Marine Mammals	The DEIS acknowledged that oil and gas activities could cause injury or death to polar bears and that all alternatives would also affect large areas of Critical Habitat. However, BLM failed to identify and analyze mitigation measures that are sufficient to protect the bears, and it did not identify how many bears would be impacted or how the impacts to these bears will affect this threatened species.	Designated critical habitat for polar bears was described in Section 3.3.5, Affected Environment (Draft EIS pages 3-127 and 3-128). The BLM will require mitigation measures similar to the current ITRs that are in effect farther west, where required mitigation is to survey for and avoid occupied dens by 1 mile, as described on Draft EIS p. 3-134 and in Appendix J in the Final EIS. Please also see responses to letter 81368, comments 32, 33, and 42, and letter 81184, comment 4. Further, the Final EIS states that approximately 20 dens could occur annually in the program area and could be affected.
153.	Withheld	Withheld	—	94547	3	Marine Mammals	How will impacts to polar bears be mitigated?	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS. Please also see response to letter 81184, comment 4.
154.	Withheld	Withheld	—	94593	5	Marine Mammals	No recent studies exist on polar bear denning in the area and potential impacts of oil and gas exploring and leasing, or projections on impacts of climate change on polar bear habitat for denning relative to oil and gas activity.	The best available scientific information was reviewed and cited in preparing Draft EIS Section 3.3.5.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
155.	Valerie	Kuntz	—	95025	3	Marine Mammals	A seawater treatment plant would have its own environmental impact on the Arctic Coastal Plain as it would have to be placed in critical denning habitat for polar bears. "All the action alternatives would affect large areas of the designated terrestrial-denning unit of critical habitat for polar bears; any facilities constructed within 20 miles of the coast would be located in that critical habitat unit" (Vol. 1, 3-133). Polar bears are an endangered species who are critically threatened by climate change alone. The DEIS does not address how the United States will honor the international Agreement on the Conservation of Polar Bears (Vol. 2, D-1) by adhering to "sound conservation practices by protecting the ecosystem of polar bears."	BLM is complying with international agreements between the U.S. and Canadian governments. The U.S. has been honoring all commitments as oil and gas activities have continually overlapped with the SBS population for decades as operations have been conducted in the existing North Slope oil fields. Text has been added to Section 3.3.5 related to impacts from seawater treatment plants.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
156.	Matthew	DePaolis	—	95032	5	Marine Mammals	Finally, the true effect the granting of these leases would have on many Arctic species is not explored, especially the polar bear. The polar bear is protected by the MMPA (MMPA), the Endangered Species Act (ESA) as well as international treaties such as the 1973 Agreement on the Conservation of Polar Bears and the Convention on Trade of Endangered Species. They are considered a threatened and depleted species and have restrictions on takes. While specific direct takes have been outlined in the DEIS, further indirect takes due to increased sea ice loss from the increased supply of oil and gas has not been explored. By granting these leases, the Federal Government will be cementing our dependence on burning the oil that is contained within the Arctic Refuge. This will exacerbate climate change, add to the positive feedback loops already causing untold damage to our planet, and accelerate the eradication of critical sea ice habitat for the polar bear. This DEIS does not explain the relationship between the extra Green House Gases (GHGs) generated by the project and the loss of critical habitat for polar bears, pushing the species to the brink of extinction.	The status of polar bears was described on Draft EIS p. 3-124 and 3-125. Greenhouse gas emissions were discussed on Draft EIS pages 3-4 to 3-9. When the polar bear was listed as threatened in 2008, the USFWS acknowledged that climate-change-related loss of sea-ice cover could not realistically be managed under their purview, so the agency focused on habitat protection and the prevention and reduction of lethal take through interaction planning and mitigation, as described on Draft EIS p. 3-140.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
157.	Debbie	Miller	—	95209	1	Marine Mammals	The EIS describes the Beaufort Sea polar bear population as having “widespread, low density denning by maternal polar bears.” This is a misleading statement. While polar bear denning may be widespread, the Arctic Refuge coastal plain has the highest density of land denning polar bears in America (https://www.fws.gov/refuge/arctic/bears.html). As many as 46 dens have been documented in the program area. The coastal plain has ideal habitat for denning pregnant bears that are in search of snowdrift habitat along the numerous rivers and in hilly terrain associated with the coastal plain. I’ve walked across the coastal plain on numerous occasions and experienced this rolling topography that is much different than areas to the west.	The USFWS estimate of 20 dens annually in the ~1.56-million-acre program area qualifies as low density, as stated in the 5-year status review (USFWS 2017: p. 14): “In some areas, the majority of polar bear denning occurs in core areas..., which show high use over time, while in other portions of the species range, polar bears den in a more diffuse pattern, with dens scattered over larger areas at lower density...” [including the SBS stock]. USFWS stated in the final rule for the ESA listing in 2008 (75 FR 76087): “In northern Alaska, denning habitat is more diffuse than in other areas where high-density denning by polar bears has been identified (Amstrup 2003, p. 595).” The Draft EIS accurately described relative density across the SBS range in Alaska, including greater numbers in the program area, but a clarifying phrase has been added in text for contrast with the high-density denning observed in some other stocks, such as by CS stock females on Wrangel I.
158.	Tim	Whitehouse	PEER	95601	57	Marine Mammals	Because the 1002 Area was managed as a wildlife refuge in the past, no significant industrial activity and related human-bear interactions have occurred there in the last 35 years. Importantly, given the uniqueness of the habitat in this area and the importance of the 1002 Area to polar bears, reliance on mitigation measures used in the NPR-A and Prudhoe Bay may not comprehensively address potential human-bear interactions in the 1002 Area.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159.	Tim	Whitehouse	PEER	95601	58	Marine Mammals	An accurate and current understanding of the population dynamics of the Southern Beaufort Sea subpopulation of polar bears is needed in order to estimate the impact of anticipated take (i.e. to determine small numbers and make negligible impact determinations under MMPA and jeopardy determinations under ESA).	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
160.	Tim	Whitehouse	PEER	95601	59	Marine Mammals	Understanding the relationship between polar bears and environmental parameters helps us explain current habitat use patterns and make future predictions on how distribution and movement is likely to respond to predicted sea ice loss and other habitat changes. This understanding is needed in order to predict how many and how animals are likely to be impacted by proposed activities (small numbers and negligible impact determination under MMPA) and whether proposed actions are likely to adversely modify or destroy designated critical habitat (ESA determination).	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
161.	Tim	Whitehouse	PEER	95601	60	Marine Mammals	An activity or suite of actions can affect the availability of polar bears for subsistence use by decreasing the overall number of animals or by changing their movements. o Understanding polar bear movements and current hunting practices helps us understand the current availability of polar bears for subsistence hunting and predict the potential impact of proposed actions on the availability of polar bears for subsistence use (MMPA determination).	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
162.	Tim	Whitehouse	PEER	95601	61	Marine Mammals	Maintaining clear and consistence communications and relationships with communities concerning ongoing research and development activities.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
163.	Tim	Whitehouse	PEER	95601	62	Marine Mammals	Understanding the potential spatial and temporal overlap between polar bears and oil and gas development and the factors influencing the likelihood and consequences of interactions between polar bears and those development activities is essential to our ability to determine the number of polar bears likely to be taken (small numbers determination under MMPA) and the consequences of that take to the individual animal and ultimately the stock (negligible impact determination under MMPA) and to the species (jeopardy determination under ESA).	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
164.	Tim	Whitehouse	PEER	95601	63	Marine Mammals	Identification of possible methods to avoid overlap and interactions between polar bears and Industry activities, and to reduce the potential for interactions, are essential tools to facilitating our ability to achieve a small numbers determination and reach a negligible impact determination (MMPA) as well as avoid jeopardy and adverse modification or destruction of critical habitat (ESA).	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
165.	Tim	Whitehouse	PEER	95601	65	Marine Mammals	Continue to evaluate emerging technologies (e.g., high-resolution satellite imagery, GPS collar reliability, collar drop off mechanism performance) for integration into existing monitoring plans.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
166.	Tim	Whitehouse	PEER	95601	66	Marine Mammals	Improve our understanding of the environmental and biological characteristics of important polar bear habitats, with a particular focus on denning habitat.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
167.	Tim	Whitehouse	PEER	95601	67	Marine Mammals	Continue, expand, and improve den detection, mapping, and monitoring activities. We see higher use of habitat within the 1002 area and greater reproductive success for land-based dens.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
168.	Tim	Whitehouse	PEER	95601	68	Marine Mammals	Identify movement and land use patterns of polar bears in the 1002 area, and projected changes due to sea ice loss, especially given the increased proportion of the population coming on shore in that region. Identify potential for habitat use and behavioral patterns to be modified due to increased human activities.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
169.	Tim	Whitehouse	PEER	95601	69	Marine Mammals	Assess Impacts to Subsistence and Cultural Use of Polar Bears o Periodically assess key community perspectives, values and needs regarding humanpolar bear interactions and sustainable use of polar bears for subsistence purposes.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
170.	Tim	Whitehouse	PEER	95601	70	Marine Mammals	Human-Polar Bear Interactions - Identify Current Methods and Develop New Methods to Avoid, Reduce and Mitigate impacts to Polar Bears from Oil and Gas Development Specific to the 1002 Area o Understand how polar bears respond to disturbance i. Use existing movement data to look at relationships with existing infrastructure (does it appear bears are avoiding those areas and if so what is the impact zone) ii. Monitor for potential disturbances at den sites o Evaluate efficacy of mitigation measures currently used outside of the 1002 area to determine effectiveness and transferability to the 1002 area i. Comprehensive Review of Management Measures (e.g., season/area restrictions, den buffer zones, facility location/design) ii. Avoidance: Examine available data to identify areas of particularly high use or biological importance for seasonal or year round avoidance areas o Develop new mitigation measures specific to the unique characteristics of the 1002 area to reduce the number of bears taken and the overall impact of Industry.	The USFWS and BLM data needs memorandum (from which this comment was copied) was provided to EIS technical analysts and was reviewed during Draft EIS preparation. See Appendix Q for discussions on incomplete and unavailable information.
171.	Harry K.	Brower Jr.	North Slope Borough	95612	45	Marine Mammals	The DEIS notes that noise and light from industrial facilities could serve as an attractant for polar bears. 26 We suggest that BLM provide additional information, including descriptions of current polar bear behavior in areas with existing oil and gas facilities and in the area around the community of Kaktovik.	Please see responses to letter 79893, comment 21; letter 81368, comments 32 and 68; and letter 92862, comment 74.
172.	Harry K.	Brower Jr.	North Slope Borough	95612	46	Marine Mammals	BLM should include a discussion of mitigation measures that have been successfully used by industry to avoid or reduce attracting and habituating polar bears.	Seismic exploration in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion, which currently are in preparation. ITRs specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in a new appendix in the Final EIS. Please also see response to letter 81184, comment 4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
173.	Harry K.	Brower Jr.	North Slope Borough	95612	47	Marine Mammals	The DEIS states that “no whale habitat is expected to be lost or altered under any of the action alternatives. BLM should review and revise this conclusion because it does not appear to be accurate, and is contradicted by other analyses in the DEIS. For example, we note that acoustic habitat is of significant importance to marine mammals because they relate to their habitat primarily through sound.	The effects of noise are discussed in the Disturbance and Displacement portion of Section 3.3.5. Final EIS text in the Habitat Loss and Alteration section has been revised to acknowledge the possible change in the soundscape and reference the Acoustic Environment section,
174.	Harry K.	Brower Jr.	North Slope Borough	95612	48	Marine Mammals	We suggest that BLM update the information regarding habitat preferences of certain seal species. 29 Young bearded seals regularly use river systems in the late summer and early fall. 30 They also have been observed using terrestrial haul outs, and are easily disturbed when hauled out.’ 1 Similarly, spotted seals make extensive use of rivers, estuaries, lagoons, and bays, and they also haul out on land where they are easily disturbed.32 BLM should incorporate this information in its consideration of potential effects to these seal species.	Final EIS text has been revised to describe seal use of riverine and coastal habitat.
175.	Harry K.	Brower Jr.	North Slope Borough	95612	65	Marine Mammals	3.3.5 3-123 Table 3-20: The Beaufort Sea and Chukchi Sea stocks of beluga whales are NOT listed as depleted. Those are the two stocks that occur near the program area. Eastern North Pacific Gray whales are also not listed as depleted under the MMPA. BLM should revise this table accordingly.	Table 3-20 has been revised accordingly for the Final EIS.
176.	Harry K.	Brower Jr.	North Slope Borough	95612	67	Marine Mammals	3.3.5 3-129 Bowhead whale: It is not clear what the significance of “the extent and duration of sea ice over the past 40 years has coincided with an increase in harvest by resident of Kaktovik.” Is there some type of cause and effect that is being suggested? If so, then the change in the quota from the International Whaling Commission must also be considered in this analysis.	No cause and effect was implied.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
177.	Harry K.	Brower Jr.	North Slope Borough	95612	68	Marine Mammals	3.3.5 3-125 It should be noted that this average is well below the voluntary quota agreed upon by the Inuvialuit-Iñupiat Polar Bear Commission.	Updated data on direct removals of polar bears during 2008–2017 has been added to the Final EIS, including comparison with the latest quota under the Inuvialuit–Iñupiat Agreement (56 currently for the SBS, comprising 35 in Alaska and 21 in Canada; Miller et al. 2018). Please also see responses to letter 81368, comment 34, and letter 81184, comment 8.
178.	Harry K.	Brower Jr.	North Slope Borough	95612	69	Marine Mammals	3.3.5 3-130 Other whales: This section provides a listing of whales that might be encountered during transit from the Bering Sea to the Beaufort Sea. However, it does not provide information about other whales that may be encountered in the Beaufort Sea adjacent to the Coastal Plain. Those species include harbor porpoises, killer whales, and narwhals. A literature review will provide the appropriate references. Bering Sea to the Beaufort Sea. However, it does not provide information about other whales that may be encountered in the Beaufort Sea adjacent to the Coastal Plain. Those species include harbor porpoises, killer whales, and narwhals. A literature review will provide the appropriate references.	These species were acknowledged in Table 3-20 but not included in discussion because occurrence is rare. This rationale was explained in the sentence following the table.
179.	Harry K.	Brower Jr.	North Slope Borough	95612	71	Marine Mammals	3.3.5 3-135 Seals: There is inadequate evaluation of the possible impacts to seals from oil and gas activity associated with leasing on the Coastal Plain. The two paragraphs that evaluate impacts on seals mention possible impacts to benthic habitat, and possible lethal impacts from on-ice seismic that might impacts ringed seal dens. There is no analysis or indication whether BLM expects those impacts to be minor, moderate, or major. The Final EIS needs to have some indication how impacts might impact populations or subsets of the population.	Final EIS text has been revised to provide a more explicit evaluation of the magnitude, extent, duration, and likelihood of impacts to seals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
180.	Harry K.	Brower Jr.	North Slope Borough	95612	72	Marine Mammals	3.3.5 3-132 The statement "The greatest declines in optimal polar bear habitat are expected to occur in those areas where reduced habitat would likely reduce polar bear populations (Durner et al. 2009; Regehr et al. 2016)" is confusing and requires clarification.	Text has been revised to eliminate confusing language resulting from document editing errors.
181.	Kaarle	Strailey	—	95670	4	Marine Mammals	Have there ever been complete inventories taken of polar bear denning sites on the coastal plain? What trends have been revealed? What techniques have been used and how accurate are they? How would impacts from oil activity be assessed?	Maternal denning were described in the Draft EIS on pages 3-127 to 3-129 and Map Figure 3-24, including discussion of trends and methods. Impacts of program activities were considered on pages 3-133 to 3-135, 3-136 to 3-138, and 3-140 to 3-142, and 3-148 to 3-149.
182.	Withheld	Withheld	—	96175	5	Marine Mammals	Polar bears are an endangered species and are critically threatened by climate change alone. How will the United States honor the international Agreement on the Conservation of Polar Bears (Vol. 2, D-1) by adhering to "sound conservation practices by protecting the ecosystem of polar bears."	BLM is complying with international agreements between the U.S. and Canadian governments. The U.S. has been honoring all commitments as oil and gas activities have continually overlapped with the SBS population for decades as operations have been conducted in the existing North Slope oil fields.
183.	Kevin	Kane	Sierra Club, Western Watersheds	96216	6	Marine Mammals	You need to state whether or not leases and lease development will adversely affect the polar bear. I await this statement. You refer to USFWS and their determination, it needs to be included in the final EIS.	Potential adverse effects of program activities were discussed on Draft EIS pages 3-133 to 3-149. Please also see response to letter 81368, comment 32. Draft EIS pages 3-148 and 3-149 described cumulative effects but that information can be improved. The section has been revised to better reflect synergistic interactions between climate change and program activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
184.	Brittney	Maruska	—	96271	1	Marine Mammals	Endangered bowhead whales thrive in narrow shelf waters. They live near the edge of the moving ice pack, as it drops south in the winter and recedes north in the summer, for the bulk of the year, using their large skulls to break through thick ice when needed. Planned drilling operations are directly in the whales' summer and fall migration path to rich feeding grounds the whales need to survive. The government admits that it does not know all the areas important to bowheads but evidence suggests several are near potential drilling sites. According to the National Oceanic and Atmospheric Administration, the historic worldwide abundance of bowhead whales prior to commercial exploitation was estimated at about 30,000–50,000, but was driven down to about 3,000 animals by the 1920s. The current population of the Bering-Chukchi-Beaufort Seas stock of bowhead whales is now thought to number between 10,000 and 16,000 individuals.	The leasing program does not include marine waters outside of the barrier islands and therefore will not result in drilling operations in bowhead whale habitat.
185.	Debbie	Miller	—	97362	1	Marine Mammals	Polar Bear Impacts - The EIS fails to address cumulative impacts from oil development on maternal bears that den on the coastal plain in the winter. The EIS notes the following possible impacts on polar bears from proposed oil development on the coastal plain of Arctic Refuge: * premature den abandonment, which can result in death of cubs * contact with poisonous oil spills, causing illness or death when bears groom themselves * chemical ingestion as a result of human activity (3 known fatalities on North Slope) * attraction to industrial facilities and increased risk associated with human-bear interactions * risk of vehicle strikes on ice and gravel roads While the above-referenced impacts pose serious threats to a threatened population of polar bears, cumulative impacts must also be considered.	Draft EIS pages 3-148 and 3-149 described cumulative effects but that discussion can be improved. The section has been revised to better reflect synergistic interactions between climate change and program activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
186.	Debbie	Miller	—	97362	2	Marine Mammals	If the coastal plain of the Arctic Refuge is developed, these threatened bears will lose desirable denning habitat. Coastal lands to the west of the Arctic Refuge have already been reserved for oil and gas development, stretching from the Canning River to the Colville River, and beyond into the National Petroleum Reserve. By developing the coastal plain of the Arctic Refuge, the last undisturbed, quiet place with desirable polar bear denning habitat will be gone. This loss of critical habitat, so desperately needed by these threatened bears, will be a major adverse impact on polar bears and their reproductive success. The climate change factor also relates to cumulative impacts for the polar bears. With climate change and loss of sea ice habitat, the Beaufort Sea bears will be headed faster down the extinction path if humans industrialize the most desirable habitat for land denning maternal bears. These polar bears would be victimized twice: first, in the development and burning of fossil fuels which causes climate change and the loss of their sea ice home; second, the continued development of more fossil fuels on lands that are critical denning habitat for the bears' survival. Loss of sea ice. Loss of land denning habitat. Potential loss of the Beaufort Sea polar bears, because of the human quest for oil in a wildlife refuge established to protect the bears. In addition to the five above-referenced impacts to polar bears, BLM should include these cumulative impacts as they pertain to polar bear denning and reproductive success: * loss of critical winter habitat for an increasing number of land denning maternal bears * increased risk of the extinction for the Beaufort Sea polar bears because of unstable sea ice conditions and fewer areas to den on land due to widespread industrialization across the North Slope.	Impacts on polar bears as a result of climate change were described on Draft EIS pages 3-131 and 3-132. Draft EIS pages 3-148 and 3-149 described cumulative effects but that discussion can be improved. The section has been revised to better reflect synergistic interactions between climate change and program activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
187.	Karimah	Schoenhut	Sierra Club	97751	1	Marine Mammals	With regard to polar bears, BLM has failed to develop and evaluate the action alternatives in light of its affirmative obligation to provide for the conservation of the species, and the Secretary of Interior's legal obligation to ensure that the original and primary purposes of the Refuge-which expressly include conserving polar bears and other species in their natural diversity-will continue to be fulfilled. 2 BLM has also improperly obscured the magnitude and severity of the impacts that the proposed action alternatives will have on polar bears by, inter alia, exaggerating the effectiveness of mitigation measures, failing to acknowledge important scientific distinctions between the Coastal Plain and other habitats in the region where oil and gas activities have taken place, failing to rationally reconcile its conclusions with the realities of climate change, and failing to provide a meaningful analysis of the impacts that polar bears will suffer as a result of the proposed program and other industrial development in the same region.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.
188.	Karimah	Schoenhut	Sierra Club	97751	2	Marine Mammals	I. BLM's Alternatives Analysis Fails to Address Affirmative Obligations to Conserve Polar Bears The assessment of action alternatives in the DE IS is defective because BLM has failed to develop and evaluate the action alternatives with regard to BLM and the Secretary's overarching legal obligations to conserve polar bears. These obligations encompass affirmative duties to take actions to recover the species and to maintain the Coastal Plain as a refuge for polar bears.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
189.	Karimah	Schoenhut	Sierra Club	97751	4	Marine Mammals	ANILCA and the Refuge Act impose a specific obligation to conserve the polar bear population utilizing the Refuge. This is a distinct obligation from conserving the species as a whole, or the Southern Beaufort Sea population (stock), as it specifically requires protecting and promoting the welfare of the portion of the population using the Refuge.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.
190.	Karimah	Schoenhut	Sierra Club	97751	5	Marine Mammals	A. BLM Has Failed to Evaluate Whether Its Proposed Action Alternatives Are Consistent with Affirmative Obligations to Conserve Polar Bears The evaluation of impacts in the DEIS focuses on the extent to which the proposed action alternatives will cause negative impacts to polar bears, but at no point does the DEIS evaluate whether the alternatives are consistent with affirmatively promoting the conservation of polar bears at either the species level, population level, or subpopulation level (i.e., the bears using the Refuge).	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
191.	Karimah	Schoenhut	Sierra Club	97751	5	Marine Mammals	the DEIS repeatedly obscures the significant impacts to polar bears by asserting that mitigation measures will reduce the impacts. But beyond this serious and legally fatal defect, the DEIS also fails to measure the residual negative impacts to polar bears from the proposed oil and gas program with respect to whether those impacts can be reconciled with the obligations to provide positive conservation benefits to the species to ensure its recovery, as well as ensure the continued existence of polar bears within the Refuge in proportions consistent with a "natural diversity" of wildlife. At no point does the DEIS consider BLM's agency-specific obligation to use its authorities to provide for polar bears recovering to the point at which the protections of the ESA will no longer be necessary. The DEIS provides no explanation of how BLM intends to fulfill this important ESA obligation, which is distinct from the ESA obligation merely to ensure that its actions do not cause jeopardy to the species by undermining its survival or recovery. Further, at no point does the DEIS evaluate whether the action alternatives will violate the requirement imposed on the Secretary to ensure that polar bears continue to be present in the Coastal Plain in numbers maintaining a "natural diversity" of wildlife or ensuring the "biological integrity" of the Refuge. The DEIS is thus legally faulty with respect to NEPA obligations because it ignores the question of whether the alternatives are lawful in light of the affirmative conservation obligations imposed by substantive laws, and weighs impacts without regard for how its actions will undermine the provision of benefits to the species.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	Karimah	Schoenhut	Sierra Club	97751	6	Marine Mammals	B. BLM Has Failed to Analyze Any Action Alternative that Will Satisfy Affinnative Conservation Obligations to Polar Bears. All of the action alternatives contemplated by the DEIS will result in net harm to polar bears. None of the action alternatives confer any positive benefits on the species. Moreover, the DEIS concedes that the additive cumulative effect of the proposed program alternatives with other development "may reach a level at which such effects become problematic for polar bears., 4 BLM fails to consider any alternative that would impose a net benefit standard for mitigation or compensatory mitigation for impacts to polar bears associated with leasing and related oil and gas activities. Nor has BLM evaluated the feasibility of any action alternatives that would provide for no net loss by ensuring application and enforcement of mitigation measures or other stipulations that will avoid, eliminate, or compensate for all negative impacts to polar bears and their habitat.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.
193.	Karimah	Schoenhut	Sierra Club	97751	8	Marine Mammals	BLM also has failed to analyze how exacerbating climate change comports with conserving polar bears.	Please see responses to letter 81368, comment 32, and letter 96216, comment 6.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
194.	Karimah	Schoenhut	Sierra Club	97751	11	Marine Mammals	BLM has failed to analyze any alternative that will comport with the Secretary's duty to conserve the subpopulation of polar bears utilizing the Refuge. At present, the only plan that details how the Secretary will meet his obligations under the Refuge Act and ANILCA is the Arctic National Wildlife Refuge Comprehensive Conservation Plan (CCP). That Plan currently does not account for oil and gas activities taking place on the Coastal Plain and oil and gas development is currently inconsistent with the CCP. Consequently, the CCP does not set forth how the Secretary will continue to satisfy his duties to ensure the primary purposes of the Refuge are met in light of the proposed oil and gas program. None of the action alternatives will preserve the status quo of the CCP in terms of providing for polar bears. All of the action alternatives will result in negative impacts to the persistence of polar bears from the Southern Beaufort Sea in the Refuge, and fail to provide measures to protect those polar bears from the lethal consequences of oil and gas activities occurring in the Refuge. All of the action alternatives have additive negative impacts that "may become problematic" for the polar bears. 6 None of the action alternatives provide for any measures to reduce the net harm to zero and therefore maintain the level of benefit to polar bears that the CCP deemed appropriate to fulfill the Secretary's obligations. BLM has not even tried to develop an alternative that purports to maintain conditions for polar bears in the Refuge at the protective baseline of the CCP. Nor has it discussed an alternative that would avoid "problematic" consequences. Thus, BLM has failed to consider any alternative that meets the Secretary's obligations to conserve polar bears.	Analyses of impacts on polar bears are described in Section 3.3.5. In addition, concurrent ESA Section 7 analysis is occurring in consultation with USFWS, during which additional mitigation measures may be identified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
195.	Karimah	Schoenhut	Sierra Club	97751	13	Marine Mammals	Because dens are essentially invisible to the naked eye, polar bear denning surveys are conducted through aerial surveys using forward-looking infrared cameras (FLIR) prior to oil and gas activities taking place in an area. Theoretically, these surveys can avoid or reduce harm to mother bears and cubs from disturbing dens by locating the den in advance of the harmful activities, and then keeping those activities at a buffer distance from the den. However, as explained by Dr. Amstrup, these FUR den detection surveys can be expected to totally fail to detect 50% of the occupied dens in a given survey area. 8 Moreover, as Dr. Amstrup explains, the failure rate would very likely be even higher for sites within the Coastal Plain due to the increased complexity of the landscape features compared to the nearby areas outside the Refuge where polar bear den detection surveys have been conducted in the past. 9	Please see response to letter 81368, comment 42.
196.	Karimah	Schoenhut	Sierra Club	97751	13	Marine Mammals	the DEIS provides no discussion of this high failure rate, nor of how it affects the BLM's reliance on this mitigation measure to conclude that impacts will be negligible. Moreover, the DEIS fails to consider whether den-detection methods will be even less successful when applied in the Coastal Plain as compared to the nearby areas where those methods have been used in the past.	Please see response to letter 81368, comment 42.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
197.	Karimah	Schoenhut	Sierra Club	97751	14	Marine Mammals	DEIS also mentions the use of dogs as a den-detection method, but totally fails to acknowledge that as a practical matter, den-sniffing dogs can only be used to verify whether a den detected by FLIR is actually a den, or to search a relatively small area, not the large expanses that would be subject to oil and gas exploration activities such as seismic surveys for oil and gas. 10 Moreover, the DEIS ignores the reality that sniffer dogs themselves can cause harmful disturbances to polar bear dens, and that the sniffer dogs must be transported via vehicles that cause harmful disturbances to polar bear dens. 11	Please see responses to letter 81368, comments 45 and 46.
198.	Karimah	Schoenhut	Sierra Club	97751	15	Marine Mammals	Instead of acknowledging the important fact that such den detection surveys will fail to detect more than half of the occupied den sites within a given surveyed area in the Coastal Plain, the DEIS makes multiple statements misleadingly suggesting that the surveys are highly effective.	Please see response to letter 81368, comment 42.
199.	Karimah	Schoenhut	Sierra Club	97751	16	Marine Mammals	As described in Dr. Amstrup's attached comments, the consequences of this high rate of failure to detect would be disastrous for reasonably foreseeable activities such as a seismic survey covering sizable portions of the Coastal Plain during a given denning season. A seismic survey would likely disturb nearly every undetected den within the bounds of the survey. 12 Taking into account that there may be up to 29 dens total, and that half of those (~15) would not be detected prior to disturbing activities, a Coastal Plain-wide oil and gas seismic exploration survey would likely disturb up to 14 out of the 15 dens, with potentially lethal latent consequences for the cubs. 13 And such a survey would have a substantial probability of resulting in immediately fatal consequences from undetected dens being directly run over by heavy vehicles, killing the cubs and mother. 14	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
200.	Karimah	Schoenhut	Sierra Club	97751	17	Marine Mammals	Taking into account the realities of vehicle movement during recent seismic surveys, Dr. Amstrup estimates that if there are as few as 10 undetected dens within the outer bounds of the area where the seismic survey takes place, there is a 79% probability that at least one of those dens would be directly run over. 15 Even if there are only 5 undetected dens in the area where the seismic survey takes place, there would be a 54% probability that at least one of those dens would be directly run over. 16 And even if there are only 2 undetected dens in the seismic survey area, the probability of directly running at least one of them over would be 27%. 17 Dr. Amstrup also estimates that if there are as few as 2 undetected dens in the seismic survey area, there is a 99% probability that at least one of them would be close enough to vehicles to cause the mother to prematurely open her den, creating a risk of latent death to the cubs resulting from leaving the den sooner than they would have without disturbance. 18 As Dr. Amstrup describes, these losses would have a population-level impact on the Southern Beaufort Sea polar bear population by exacerbating its current decline. 19	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.
201.	Karimah	Schoenhut	Sierra Club	97751	18	Marine Mammals	the DEIS violates NEPA by misleadingly concluding that den detection surveys will reduce harm to negligible levels, and thereby obscuring the true extent of harm.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
202.	Karimah	Schoenhut	Sierra Club	97751	20	Marine Mammals	failure to take a hard look at impacts is that BLM does not evaluate the need to impose restraints on the spatial extent of seismic surveys that can occur during a single denning season.	Appendix B describes the seismic exploration analyzed in the EIS. Seismic exploration can be done across the full extent of the program area, not just the area available for lease. Site-specific NEPA analysis will be conducted for proposed seismic exploration. Site-specific NEPA analysis will need to be done for any proposed seismic exploration, which will include analyzing potential impacts on polar bears. The range of impacts predicted for polar bears is discussed in Section 3.3.5 of the Final EIS.
203.	Karimah	Schoenhut	Sierra Club	97751	21	Marine Mammals	Dr. Amstrup shows quantitatively how a Coastal Plain-wide 3D seismic survey like the one proposed to BLM in 2018 would cause potentially lethal consequences to numerous denning polar bears and cubs because of the at least 50% failure to detect rate associated with den detection methods, the tight density of the seismic survey grid (which defines the area that will be traversed by heavy vehicles), the distance of heavy vehicle passage known to cause serious disturbance to denning polar bears, and the number of dens likely to be distributed in the Coastal Plain during a given denning season.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.
204.	Karimah	Schoenhut	Sierra Club	97751	22	Marine Mammals	Dr. Amstrup's analysis demonstrates a seismic survey grid density like the one proposed to BLM by SAExploration in 2018 would place 88% to 92% of the land surface in the survey area within 65 meters of heavy vehicle passage, a proximity that has caused premature den emergence in the past. 25	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

S. Public Comments and BLM Responses (Marine Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
205.	Karimah	Schoenhut	Sierra Club	97751	23	Marine Mammals	vehicle passage at 65 meters from the den was documented as causing a mother polar bear to open her den prematurely during a field encounter. See id. at 5. Therefore, the analysis uses 65 meters as a distance known to cause den opening, and therefore create serious risk of premature den abandonment and other potentially lethal consequences.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.
206.	Karimah	Schoenhut	Sierra Club	97751	24	Marine Mammals	a seismic survey would on average result in up to 2 of 15 undetected dens being directly run over by heavy vehicles, with potential immediately fatal consequences for the mother and cubs, when the realities of vehicle path width are taken into account, and there would be a 90% probability of at least one den being run over under those circumstances. 28 Even if there were only 10 undetected dens dispersed in the seismic survey area, there would be a 79% probability of at least one den being directly run over when the realities of vehicle path width are taken into account. 29	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.
207.	Karimah	Schoenhut	Sierra Club	97751	27	Marine Mammals	the DEIS fails to provide any analysis of the risk of immediately fatal encounters occurring when undetected dens are directly run over.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
208.	Karimah	Schoenhut	Sierra Club	97751	28	Marine Mammals	the DEIS with little to no explanation presents one alternative that would exclude seismic surveys within 1 mile of "potential denning habitat" from a very small section of the Coastal Plain (105,400 acres) during the polar bear denning season (see Alternative D - Lease Stipulation 5), 35 an area which encompasses only 8.8% of the polar bear critical habitat for terrestrial denning. 36 The only apparent rationale that can be gleaned from the DEIS for conferring protection on that small portion of the habitat is that 37% of known historic dens in the Coastal Plain have been observed there. 37 The implication in the DEIS is that the density of polar bear dens in that 105,400 acres of the Coastal Plain is higher than in the rest of the Coastal Plain. The DEIS provides no analysis or evaluation of the legitimacy of this important assumption. It does not evaluate whether the apparent density may be the result of survey biases from observations being made more frequently in areas that are most physically accessible to researchers, or more frequently accessed by researchers.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

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209.	Karimah	Schoenhut	Sierra Club	97751	29	Marine Mammals	BLM has made a vitally important decision about what habitat to protect, ostensibly based on conclusions that the environmental impact in that area would be more dire than in the rest of the Coastal Plain, without providing any analysis in the DEIS to explain its assessment of that impact, its many underlying assumptions, or how it evaluated those assumptions. This failure to explain its assessment of impacts is in itself a violation of NEPA requirements. Moreover, even if BLM could rationally support a conclusion that 37% of den sites are located within just 105,400 acres of the Coastal Plain, which is seemingly the most extreme conclusion they could reach from the data they present, that would not obviate the need to impose significant constraints on the areal extent of the seismic surveys to be conducted in the rest of the Coastal Plain. 39 If, as Dr. Amstrup estimates, there are 20-29 dens in the Coastal Plain each year, that would still mean that roughly 13 to 18 dens (i.e. 63% of 20 and 29) would be located in the section of the Coastal Plain not subject to the protections of Alternative D - Lease Stipulation 5.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
210.	Karimah	Schoenhut	Sierra Club	97751	30	Marine Mammals	there is a substantial probability of a mother and her cubs being immediately killed or severely injured from a seismic survey, even if the spatial restrictions of Alternative D - Lease Stipulation 5 are fully enforced. Yet the DEIS totally fails to evaluate what the impacts on polar bears will be from allowing seismic surveys to move forward in the vast area not protected by that stipulation.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

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211.	Karimah	Schoenhut	Sierra Club	97751	31	Marine Mammals	C. The DEIS Improperly Relies on Future Decisions by Other Agencies to Conclude Impacts to Polar Bears Will Not Be Significant Due to Mitigation. The DEIS repeatedly relies on the assertion that Incidental Take Regulations (ITRs) covering other locations have successfully minimized impacts on polar bears from oil and gas activities to conclude that future ITRs for the Coastal Plain therefore will ensure that impacts to polar bears from the program activities on the Coastal Plain will be "low." 44 This assertion is faulty and BLM's substitution of these assertions for analysis of impacts violates NEPA for several distinct and independent reasons. First, BLM cannot abdicate its responsibility under NEPA for assessing the impacts that the program will have on polar bears by deferring the actual analysis of impacts to future decision-making by another agency.	Please see responses to letter 81368, comments 32 and 69. The BLM is not abdicating its responsibility under NEPA; rather, it is relying on the expertise of the USFWS, the federal agency responsible for managing polar bears, to craft the new ITRs that will be required for oil and gas activities in the program area.
212.	Karimah	Schoenhut	Sierra Club	97751	32	Marine Mammals	Second, the standard for issuing an ITR under the MMPA is that the impact on the stock (here the Southern Beaufort Sea polar bear population) will be "negligible" and affect only "small numbers." 16 U.S.C. § 1371(a)(5)(A)(i). But a negligible impact on the entirety of the Southern Beaufort Sea population does not necessarily amount to an insignificant impact on the polar bears inhabiting the Refuge, nor does it necessarily amount to a less than significant impact on the values of the Refuge. 45	The ITR/LOA process must consider impacts on the entire SBS stock. There are no data to suggest that the Arctic National Wildlife Refuge is inhabited year-round by a specific group of individual polar bears. Rather, the available data suggest that bears move into and out of the refuge seasonally.
213.	Karimah	Schoenhut	Sierra Club	97751	33	Marine Mammals	In relying on the ITRs, BLM is improperly ignoring the need to take a hard look at whether impairing the usage of the Refuge by polar bears, and the presence of polar bears in the Refuge, is a significant impact to the values and purposes of the Refuge apart from impacts to the whole Southern Beaufort Sea stock.	The ITR/LOA process must consider potential population-level impacts on the entire SBS stock.

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214.	Karimah	Schoenhut	Sierra Club	97751	34	Marine Mammals	the DEIS fails to consider that past ITRs for other regions were not necessarily effective, as well as to consider whether geographic differences and changing environmental conditions cast doubt on the presumption that past effectiveness can be relied upon to conclude future ITRs also will be effective.	USFWS evaluations of the ITR/LOA process in the final rule for the current ITRs (81 FR 52276), Polar Bear Conservation Management Plan (USFWS 2016), and 5-year status review (USFWS 2017) concluded that the ITRs have been effective in minimizing impacts on the SBS stock of polar bears, providing the best indication of the likely efficacy of the new ITRs that will be required and are being developed for the program area. For instance, p. 74 of the Conservation Management Plan states that "The Service determined that direct impacts on polar bears from oil and gas exploration, development, and production activities had been minimal and did not threaten the species overall."

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215.	Karimah	Schoenhut	Sierra Club	97751	35	Marine Mammals	nothing in the DEIS supports a conclusion that FWS could actually rationally and lawfully find that the impacts of oil and gas activities will be negligible in light of the catastrophically declining status of the Southern Beaufort Sea population, the density and number of bears denning in the Coastal Plain, the greater difficult of using den-detection methods due to the habitat complexity, the higher presence of polar bears in the Coastal Plain compared to other onshore areas, and the ongoing effects of climate change. Nor does the information in the DEIS support a conclusion that FWS could rationally and lawfully conclude that only "small numbers" will be affected by the proposed activities taking place in the Coastal Plain. It is only by ignoring the differences between the Coastal Plain and other areas, and glossing over the realities of climate change now and during the time when program activities will be occurring that the DEIS assumes that impacts will be negligible and affect only small numbers.	Please see responses to letter 74288, comment 3, and letter 75904, comment 20. New ITRs for the program area are currently being prepared. It is premature for the commenter to reach a conclusion about the associated impact analysis before the draft ITRs are available for review.
216.	Karimah	Schoenhut	Sierra Club	97751	37	Marine Mammals	fatal interactions are likely to increase, and the consequences of the resulting losses are more dire now than in the past given the declining status of the SBS population. 54 Further, due to stresses caused by climate change, interactions that in the past may have resulted only in annoyance to maternal bears, such as disturbance leading to a den relocation prior to birthing, could now result in serious harm due to bears being less nourished than in the past. 55 BLM has failed to consider these distinctions. BLM's assertion to the public that mitigation measures like those imposed by past ITRs will reduce impacts of the proposed alternatives to "low," non-significant levels therefore is arbitrary and capricious, misleading, and a failure to take the hard look at impacts required by NEPA.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, and 39.

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217.	Karimah	Schoenhut	Sierra Club	97751	38	Marine Mammals	The DEIS totally fails to reconcile its reliance on past mitigation measures and observations with its acknowledgment that climate change is disastrously altering conditions for the Southern Beaufort Sea (SBS) polar bears.	Please see response to letter 95032, comment 5.
218.	Karimah	Schoenhut	Sierra Club	97751	39	Marine Mammals	The discussion of impacts, considered in light of climate change, is limited to brief glosses that fail to provide any indication of the total anticipated impact on the species, SBS stock, or continued presence of polar bears in the Refuge. Worse, the DEIS does not reconcile its conclusions that harm will not be significant with the facts it acknowledges about the present and future conditions resulting from climate change, and how they differ from past conditions.	Please see responses to letter 81368, comment 32; letter 94076, comment 70; letter 95032, comment 5; and letter 96216, comment 6.
219.	Karimah	Schoenhut	Sierra Club	97751	40	Marine Mammals	Despite acknowledging that the number of bears on land will continue to increase, that denning on land will increase, that denning polar bears will be deterred from denning in locations affected by oil and gas facilities, and that the bears are more likely to be in poorer condition and nutritionally-stressed than in the past, 67 the DEIS does not explain whether or how the impacts can nonetheless be described as "low" once these factors have been accounted for. Again, the DEIS presents a conclusion, then notes facts that run contrary to its conclusion, but then fails to reconcile those facts with its conclusion that impacts will be low.	Please see responses to letter 81184, comment 4; letter 81368, comments 32, 33, and 34; and letter 94076, comment 92.
220.	Karimah	Schoenhut	Sierra Club	97751	41	Marine Mammals	due to climate change, the numbers of polar bears on land and visiting the bone pile at Kaktovik are almost certain to increase as sea ice continues to decline; numbers of maternal polar bears attempting to den in the Refuge are likely to increase and their importance to population welfare will continue to grow at the same time activities proposed in the DEIS will increasingly impact them; and negative polar bear/human interactions are sure to increase in number. 68	Comment noted. Draft EIS Section 3.3.5 acknowledged and described these trends as likely to occur, based on published literature. Please see response to letter 94076, comment 92.

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221.	Karimah	Schoenhut	Sierra Club	97751	42	Marine Mammals	the DEIS itself states that “any injury or mortality ... would pose a problem” due to the already declining status of the SBS population, 70 but fails to reconcile that statement with its conclusions that impacts of the program are “low” or “negligible.”	Please see responses to letter 81368, comment 32, and letter 94076, comment 92.
222.	Karimah	Schoenhut	Sierra Club	97751	44	Marine Mammals	the DEIS also fails to examine how the direct and indirect greenhouse gas emissions contributed by combustion and leakage of oil and gas from the Coastal Plain leasing program will affect polar bears by exacerbating or accelerating climate change, or undermining efforts to budget carbon to limit climate change.	Please see response to letter 95032, comment 5.
223.	Karimah	Schoenhut	Sierra Club	97751	45	Marine Mammals	E. The DEIS Fails to Take a Hard Look at the Effects of Oil and Gas Related Industrialization in Polar Bear Habitat The DEIS projects that the Coastal Plain leasing program will result in extensive industrial facilities along the coastline, but fails to analyze the impacts of these coastal facilities either in isolation or cumulatively with other industrialization taking place along the Arctic Coast of Alaska.	The importance of the coastline (including the Barrier Islands unit of critical habitat) for polar bear movements was described in Draft EIS Section 3.3.5. It is inaccurate to suggest that the hypothetical development scenario in Draft EIS Appendix B predicted “extensive industrial facilities along the coastline,” and protective measures for coastal habitats were described under the various action alternatives. Other industrialization on the Arctic Coastal Plain west of the program area was considered under Cumulative Impacts on Draft EIS pages 3-148 and 3-149.

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224.	Karimah	Schoenhut	Sierra Club	97751	46	Marine Mammals	In combination with other oil and gas development taking place, the industrialization associated with a Coastal Plain leasing program would mean that essentially half of the Arctic Coast of Alaska is occupied in some form by industrial developments, and the previously pristine coastline pregnant polar bears visit each autumn would be fragmented by human developments. 80	In view of the limited amount of development (given the restrictions mentioned in the previous response) that potentially could occur on the coastline if commercially viable petroleum reservoirs are found in the program area, it is speculative to suggest that the coastline would be fragmented by development, implying that bears would not cross infrastructure. As described in Draft EIS Section 3.3.5, ITR reports indicate that polar bears cross infrastructure while moving through the existing North Slope oil fields, exhibiting short-term, localized behavioral disturbance in the process. Please also see response to letter 68965, comment 85.
225.	Karimah	Schoenhut	Sierra Club	97751	47	Marine Mammals	The DEIS fails to assess how this industrialization will impose potentially disastrous increased energetic costs on polar bears coming onshore to seek den locations.	The possibility of increased energetic costs for bears spending more time on land was described on Draft EIS page 3-132. Please also see responses to letter 81368, comments 62 and 67.
226.	Karimah	Schoenhut	Sierra Club	97751	48	Marine Mammals	The DEIS does not assess how the extensive critical habitat destruction, alteration, and fragmentation associated with the footprint of facilities described in the RFD will affect polar bears.	It is premature and speculative to analyze facility footprints before any specific development proposals are proffered. Any such proposals would be subject to additional NEPA analyses, along with associated BAs and BOs under the ESA. The latter documents would analyze the potential for destruction or adverse modification of designated critical habitat in the program area.

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227.	Karimah	Schoenhut	Sierra Club	97751	49	Marine Mammals	Rather than assess these impacts on polar bear habitat, the DEIS implies that stipulations will mitigate the impacts of development in polar bear habitat. But the DEIS provides no actual analysis to show how development of permanent facilities that could nonetheless still occur under the terms of the stipulations would fragment polar bear habitat by creating obstacles in the corridors between areas of suitable denning habitat. For example, Alternative D - Lease Stipulation 5 would prevent permanent facilities within 1 mile of suitable denning habitat for areas within 5 miles of the coast. Aside from the important fact that this stipulation can be waived by BLM officials, even if fully enforced the stipulation would not bar permanent facilities from areas of critical habitat between the one-mile buffer zones surrounding segments of what the DEIS maps as suitable denning habitat. What is totally missing from the DEIS is an analysis of whether development in the areas between and around those buffered segments could affect access to the denning habitats, or movement between segments of suitable denning habitats.	Please see response to letter 97751, comment 46.

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228.	Karimah	Schoenhut	Sierra Club	97751	52	Marine Mammals	the DEIS expressly states that exceptions to No Surface Occupancy stipulations would be made for roads, pipelines, barge landings, and docks, 86 making it plain that those stipulations do not preclude habitat fragmentation and obstruction of access to denning locations for polar bears. To comply with NEPA, the DEIS should have analyzed the impact of the anticipated facilities in the RFD being constructed along the coastal area of the Coastal Plain on fragmentation of polar bear habitat, and the consequences of that likely footprint of industrial facilities for imposing additional energy demands on already weakened maternal polar bears seeking den locations. The DEIS cannot rationally rely on the proposed stipulations without assessing the impact from development in the areas that the stipulations leave available for the projected development.	Please see responses to letter 97751, comments 46, 47, and 48.
229.	Karimah	Schoenhut	Sierra Club	97751	54	Marine Mammals	Given the other industrialization taking place along the Alaskan coast, the loss of sea ice, and the declining condition of the Southern Beaufort Sea bears, the Coastal Plain of the Arctic National Wildlife Refuge is truly a refuge for polar bears, in particular the maternal bears seeking to den on land — a place where, up to this point, they could den in safety. The DEIS thus must also examine the impacts of proposed RFD in the broader context of an industrialized Alaskan coast, and provide an assessment of the magnitude and severity of the full cumulative effect of that projected development on the polar bears.	Please see responses to letter 94076, comment 70; letter 95032, comment 5; letter 96216, comment 6; and letter 97751, comments 45 and 46.
230.	Karimah	Schoenhut	Sierra Club	97751	56	Marine Mammals	the DEIS provides a cursory analysis of the impacts of seismic exploration that consists largely of acknowledging the activity can cause serious harm, but then (erroneously and conclusorily) assuming that the harm will be reduced to negligible levels by the application of den detection surveys and avoidance of dens identified by den detection surveys.	Please see responses to letter 81184, comment 4, and letter 81368, comments 32, 33, 34, and 42.

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231.	Jenna	Jonas	—	97882	1	Marine Mammals	The DEIS acknowledges that “the potential for injury or mortality could be high when developing new oil and gas projects in polar bear habitat.” (Vol 1, p. 3- 142) Nevertheless, there is no estimate of the number of bears that could be killed, injured or displaced by the leasing process or seismic testing.	The quoted paragraph in the Draft EIS went on to state that “the risks are well understood” and “effective mitigation is available,” judging from the effectiveness of the ITR/LOA process and associated mitigation at minimizing injury and mortality. Please also see responses to letter 81368, comments 32, 33, 42, and 69, and letter 81184, comment 4.
232.	—	—	United States Fish and Wildlife Service	97942	69	Marine Mammals	Page 3-125: In the second full paragraph, the DEIS confuses incidental take with intentional take. ITRs and associated LOAs are for the incidental take of polar bears as a consequence of an otherwise lawful activity. Independent of that, authorizations are provided to allow intentional take through harassment in order to protect human life.	The referenced paragraph discussed only incidental take, not intentional take. Clarification has been added in the next paragraph of the Final EIS to eliminate potential confusion by further distinguishing incidental take from intentional take.
233.	—	—	United States Fish and Wildlife Service	97942	70	Marine Mammals	Page 3-127: The DEIS states that critical denning habitat for polar bears only occurs in those areas with topography sufficient to capture enough snow for dens to be constructed. However, the actual critical habitat designation covers a much larger area and includes not only the microhabitat features (i.e., those where snow can accumulate), but also the macro-habitat features that allow bears to access those features and move back to the sea ice post emergence. This should be corrected in the final EIS.	The Terrestrial Denning unit was introduced in the list of three designated critical habitats on Draft EIS page 3-127, which did not state that “only” those areas with suitable topography were designated. Further description and discussion was provided on page 3-133 stating that this unit constitutes 77% of the program area, and on page 3-134 clarifying that not all portions of the unit have equal value for maternal denning. Most of the terrain in the Terrestrial Denning unit are not conducive to the formation and persistence of suitable snow drifts throughout the winter denning season, which is why the Draft EIS depicted the potential maternal denning habitat that has been mapped in the program area (Map 3-24).

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234.	—	—	United States Fish and Wildlife Service	97942	72	Marine Mammals	Page 3-137: The DEIS states “If dens are detected within a 1-mile buffer zone around the proposed locations of roads and pads, then the facility locations would be moved outside of that radius to avoid dens, as required by ITRs, to reduce the effects on occupied dens to a negligible level.” While that is currently true, if new data emerged that suggests bears could be disturbed at distances >1 mile, then a larger buffer would be required. Similarly, if data supported a smaller area, a smaller buffer could be required. We recommend the language be revised to reflect that this no disturbance buffer is subject to change.	A 1-mile buffer is stipulated in the current ITRs (which form the basis of the new ITRs currently being developed for the program area) around known occupied dens and a 1-mile radius also was the basis for the no-disturbance zone around the Barrier Islands unit of critical habitat. The latter is unlikely to be changed, but the 5-year duration of ITRs allows for future adjustment of the radius around occupied dens, if new data become available for review.
235.	—	—	United States Fish and Wildlife Service	97942	73	Marine Mammals	Page 3-141: The discussion of the potential effects of an oil spill on polar bears is not sufficient. While it's true that a spill associated with an accident involving a barge would likely be smaller than that modeled for an offshore oil well, sufficient volume of oil could still be released that could harm polar bears. This is especially true depending on where and when barges are likely to land. If barge landings are in the vicinity of Kaktovik, they could coincide with large aggregations of bears during the open water period. A spill adjacent to those waters could expose a large number of polar bears.	Additional text has been added to the 4th paragraph on Draft EIS page 3-141 to accommodate this suggestion.

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236.	—	—	United States Fish and Wildlife Service	97942	75	Marine Mammals	Page 3-146: The DEIS states, "Under ROP 10, the pre-activity surveys required to locate dens, plus the 0.5-mile and 1-mile buffers for seismic and heavy equipment operation around occupied dens of grizzly and polar bears, respectively, would help to reduce the impacts of behavioral disturbance on denning bears (as well as birth lairs of ringed seals on landfast ice along the coast) throughout the entire program area." However, Alternatives B and C do not require such surveys, just a requirement to avoid known dens. We recommend changing the ROP under Alternatives B and C to require den surveys. Without the requirement for surveys to detect dens, the requirement to avoid known dens carries greatly diminished conservation value.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA. Additional mitigations would be required during site-specific analysis and ESA and MMPA consultation.
237.	—	—	United States Fish and Wildlife Service	97942	76	Marine Mammals	Map 3-24: The map legend is mislabeled. It states that the stars are potential denning habitat when in reality they depict sites of known polar bear dens observed over the years. Additionally, those data are wrongly attributed to Durner et al. (2006) rather than to the USGS den catalogue. Similarly, the yellow lines depicting potential denning habitat should be cited as Durner et al. (2006) rather than just "Durner data" and should be labeled as "polar bear denning habitat" rather than just "polar bear habitat".	Point taken regarding errors in citing data sources for the legend. The map legend has been revised accordingly for the Final EIS.
238.	Madeline	Miller	—	98022	2	Marine Mammals	1 Durner, G., K. Simac, and S. Amstru p. 2012. Mapping Polar Bear Maternal Denning Habitat in the National Petroleum Reserve - Alaska with an IfSAR Digital Terrain Model. Arctic 66(2):197-206. 'Fischbach, A., S. Amstrup, S., and D. Douglas. 2007. Landward and eastward shift of Alaskan polar bear denning associated with recent sea ice changes. Polar Biol. 30 :1395-1405.'	Both of these references were examined during Draft EIS preparation and were cited in the document.

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239.	Jacob	Hensch	—	98022	2	Marine Mammals	Even if a polar bear finds a suitable place to den and gives birth, noise from facility operations inland and drilling activities can drive them out of their dens prematurely. A buffer zone between human activity and polar bear dens is essential to preventing this issue. Due to the various concerns enumerated above, it is imperative to the survival of this species that the proposed action is further modified to minimize its impact. The BLM's DEIS fails to sufficiently evaluate the effects that the leasing program will have on polar bear activity and reproduction. The BLM must reconsider alternatives to prioritize marine mammal protection and minimize detriment to polar bear populations.	As described on Draft EIS page 3-134, a 1-mile buffer zone is established around occupied maternal dens under current ITRs to minimize disturbance from industrial activities. New ITRs are being developed for the program area, which are expected to stipulate the same mitigation measures that have been developed and used in the current and previous ITRs in effect to the west of the program area. Please also see responses to letter 81184, comment 4, and letter 81368, comment 32.
240.	Brook	Brisson	Trustees for Alaska	98269	127	Marine Mammals	The EIS does not satisfactorily address any of these issues, and indeed fails utterly to assess the interactions between how drilling activities and climate change might affect wildlife and habitat. The Climate Change discussion in the Marine Mammals section (3.3.5) briefly addresses the challenges to polar bears and other marine mammal species, but it fails utterly to address the interacting and cumulative effects of climate change and oil and gas drilling.	These interactions and cumulative effects are discussed in depth in the Final EIS on Effects of Oil and Gas Activities in the Arctic Ocean (NMFS 2016). That document was incorporated by reference in the Draft EIS (page 3-133).

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241.	Brook	Brisson	Trustees for Alaska	98270	4	Marine Mammals	Along the marine barge route, the DEIS also states that vessels may encounter eight additional large whale species: blue, fin, humpback, minke, North Pacific right, sperm, and killer whales.1592 All eight species are protected by the MMPA; in addition, the blue, fin, sperm, North Pacific right, and Western North Pacific distinct population segment (DPS) of humpback whales are listed under the ESA as endangered, while the Mexico DPS of humpback whales is listed as threatened.1593 Puzzlingly, the DEIS later discounts any impacts from vessel collision to the western North Pacific DPS of gray whales, also listed as endangered under the ESA, although the DEIS never identifies this species as occurring along the marine barge route and fails to include any further discussion regarding the species.1594	The Final EIS text has been edited to include more information on gray whales in Section 3.3.5, Marine Mammals, Other Whales.
242.	Brook	Brisson	Trustees for Alaska	98270	5	Marine Mammals	As detailed below in Section V.W., Shipping, the DEIS improperly limits the geographic scope of the “affected environment” and inappropriately focuses on the “program area” rather than providing the necessary baseline descriptions of marine areas, and the species that occur in those areas, along the marine barge route. 1595 The DEIS also fails adequately to discuss the environmental impacts that could occur along the marine barge route to large whales, specifically: oil and hazardous substance spills,1596 noise,1597 and ship strikes.1598	Text has been added in Section 3.3.5 related to the marine barge route.

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243.	Brook	Brisson	Trustees for Alaska	98270	149	Marine Mammals	The DEIS has also failed to provide adequate baseline information regarding cetacean species, particularly large whales, and their vulnerability to impacts from vessel traffic, either in marine waters within 5 nm of the program area or along the 1,600 nm marine barge route. The DEIS acknowledges that two whales-the bowhead (<i>Balaena mysticetus</i>) and the beluga (<i>Delphinapterus leucas</i>)-are commonly found within 5 nm of the coastline of the Arctic Refuge.1892	Baseline information is incorporated by referencing the EIS for the Liberty development (BOEM 2018) and for Effects of Oil and Gas Activities in the Arctic Ocean (NMFS 2016). The text focused on species most likely to be encountered and affected by activities related to the lease sales.
244.	Brook	Brisson	Trustees for Alaska	98270	166	Marine Mammals	The most extensive discussion of [shipping and icebreaking] noise impacts is in the marine mammal section of the DEIS.1935 The discussion is flawed, however, because it relies too heavily on the presumed effectiveness of the proposed ROPs. As a result, it understates the potential impacts and inappropriately concludes that they will be minimal. Conclusions that there will be no population-level impacts resulting from disturbance (e.g., seals1936) also lack justification and evidence. Additionally, as discussed in Section V(K) above with respect to polar bears, the DEIS fails to analyze the impacts of underwater noise arising from the construction of shipping-related facilities offshore, such as pile-driving, which can harm cetaceans and other marine mammals.1937 The discussion should be revised to provide a more realistic analysis of shipping, icebreaking, and construction noise impacts on marine mammals near the program area and along the marine shipping route.	The impacts of underwater noise are discussed in depth in the Final EIS on Effects of Oil and Gas Activities in the Arctic Ocean (NMFS 2016). That document is incorporated by reference on page 3-139. The Acoustic section has been revised to provide a more comprehensive description of the acoustic soundscape and possible consequences of the indirect impacts from the lease sale.

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245.	Brook	Brisson	Trustees for Alaska	98270	168	Marine Mammals	The DEIS's conclusion that ship strikes of whales and seals would be "unlikely" 1941 is based in large part on BLM's assumption that vessel traffic would be traveling slowly, i.e., at less than around 10 knots. 1942 There is presently nothing in the leasing stipulations or ROPs, however, generally requiring ships to adhere to a 10-knot speed limit. This section of the DEIS should be completely revised. The revised version needs to present a more realistic, scientifically-based analysis of the risk and impacts, including at individual and population levels, of vessel strikes based on overlap of whale habitat with shipping routes and the actual speeds at which vessels are expected to travel, both within or near the program area and along the marine barge route.	The 10-knot speed is a reasonable standard and would align with other practices across the North Slope. Additional restrictions will be analyzed on a project-specific basis.
246.	Brook	Brisson	Trustees for Alaska	98270	169	Marine Mammals	The DEIS's reliance on the paucity or absence of records or evidence of ship strikes to conclude that strikes are unlikely is not satisfactory. 1945 As noted by the IWC, ship strikes often go unnoticed, unreported, or undiscovered, 1946 so relying on recorded strikes alone is likely to substantially underestimate actual incidences of ship strikes. Indeed, documenting ship strikes is especially challenging in Alaska, and such collisions are vastly under-reported. 1947 1946 See IWC Webpage, Conservation and Management: Ship Strikes, https://iwc.int/shipstrikes (accessed Feb. 26, 2019). 1947 See Neilson, J., et al, Summary of Reported Whale-Vessel Collisions in Alaskan Waters, 2012 J. Marine Biol., Article ID 106282 (2012), available at https://www.hindawi.com/journals/jmb/2012/106282/ .	The analysis also considers vessel speed, probability of encounter, and behavioral evidence that bowhead whales avoid vessels. The text was revised to acknowledge that collisions are possible and may occur rarely. Note that Neilson et al. (2012) show no strikes north of 60 degrees; most occur in the inland waterways of Southeast Alaska, which have higher densities of marine mammals and more vessels than those along the shipping route and Arctic coast. These are the best data available for the region.

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247.	Brook	Brisson	Trustees for Alaska	98271	248	Marine Mammals	It completely ignores the Potential Biological Removal (PBR) level established for the SBS stock under the MMPA. PBR is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its Optimum Sustainable Population (OSP). 1454 PBR for the SBS stock has most recently been calculated at 14, far below the average number of bears removed via annual harvest alone. 1455 According to a recent FWS memorandum, with at least 33.2 bears removed from the SBS population annually compared to a PBR of 14, it is clear that "the ability of the population to reach OSP is [already] being compromised." 1456 The DEIS neglects to consider this baseline information in its cursory evaluation of the status of the SBS stock or incorporate it into its cumulative effects analysis. As noted in the FWS memorandum, it is reasonable to assume that any additional lethal take from proposed seismic testing would additionally impact the SBS stock causing further adverse effects on annual rates of recruitment or survival. 1457 Likewise, over the lifetime of an industrial oil field, from post-lease exploration, to infrastructure construction, oil and gas development and production, it is reasonable to assume that some additional level of lethal take will occur. 1455 FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 11. Even using the 2010 minimum population estimate of 1397 SBS bears, PBR was calculated at 22 — also well below the mortality from harvest alone. FWS Polar Bear Stock Assessment 2010 at 3. 1456 U.S. Fish and Wildlife Service, Memo re: 1002 Coastal Plain Incidental Take Regulation Application, September 2018 at 3	Please see responses to letter 81184, comment 8, and letter 94076, comment 92.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
247. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	available at https://assets.documentcloud.org/documents/5647572/Alaska-Memo.pdf . Notably, while comparison to the PBR calculated by FWS demonstrates that oil and gas activities under the program are likely to cause impacts that the DEIS has failed to acknowledge, the PBR itself cannot rationally be used to show an acceptable take level in the context of a stock like the SBS population that is already experiencing such catastrophic decline. 1458 1458 See March 2019 Amstrup Letter at 33.	(see above)
248.	Brook	Brisson	Trustees for Alaska	98271	250	Marine Mammals	The DEIS also fails to consider that sustainable removal rates rely on assumptions about the sex-ratio of polar bears taken by harvest, as well as other conditions. Historically, removing 4.5% of a polar bear population annually was considered sustainable take, a level at which the population can still produce maximum sustainable yield (Taylor et al. 1987). 1459 But that conclusion turns on qualifiers related to sex-ratio and the absence of other stressors that are not consistent with the realities affecting the SBS population. Taylor estimated the sustainable yield of the female component of the population at < 1.6% per annum under optimal conditions. 1460 Such "optimal conditions" clearly do not exist at present for the SBS population. Recent research by Regehr et al. (2015) found that while the 4.5% removal rate would be generally reasonable in the absence of climate-change-related stressors, a lower rate may be necessary to avoid accelerating population declines caused by habitat loss due to climate change. 1461 1459 FWS Polar Bear Five Year Review: Summary and Evaluation 2017 at 25. [comment end] 1460 Id. (omitting the phrase "under optimal conditions" from the study). See Taylor et al., Modeling the Sustainable Harvest of Female Polar Bears, J. Wildl. Manage. 51(4) at 811	Because no removal is proposed under the leasing program and because the direct removal of polar bears from the SBS stock has been low historically under the ITR/LOA process, a detailed analysis of removal rates was not considered necessary for the Draft EIS. Harvest-related removal is regulated under the Inuvialuit–Inupiat Agreement and has been the subject of extensive review in the Polar Bear Conservation Management Plan (USFWS 2016: pages 45–46, pages 69–70, and Appendix C). Please also see responses to letter 81184, comment 8, and letter 94076, comment 92.

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248. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(1987). The Taylor study is not included in the DEIS References. The FEIS must provide the best available science regarding sustainable removal from the SBS population and explain how additional polar bear take and harassment from industrializing the coastal plain is consistent with recovering the population. 1461 Id.	(see above)
249.	Brook	Brisson	Trustees for Alaska	98271	255	Marine Mammals	This extensive system of coastal infrastructure would significantly alter and permanently fragment critical habitat for polar bears, rendering thousands of acres on the coastal plain either undesirable or completely unavailable. Although bears prefer sea ice habitat to hunt, roam and rest, both males and females are known to use land habitat in late summer and early fall, with females remaining an average of 56 days and increasing. 1473 The coastal plain has already become the denning habitat used by a large proportion of SBS bears, and will likely become progressively more important for bears to hunt, roam and rest, as well. As discussed further below, SBS polar bears are facing deteriorating health and the avoidance behavior and energetic losses posed by this project will worsen their existing conditions. The DEIS fails to take a hard look at this enormous imposition of industrial infrastructure and associated activities on polar bear critical habitat, simply stating the following: Most polar bears moving through areas near industrial facilities would likely be disturbed by activities on, or be hazed away from, drill-site pads. Disturbance from traffic on access roads would likely alter the use of habitats by bears nearby, although those effects would diminish for facilities located farther inland because they would be less likely to be used by bears than other areas near the coastline. Overall, the effects of reduced use of habitats near oil and gas facilities likely would be minimal, although they	Without specific development proposals (which would be expected in future years, after lease sales, if exploration finds petroleum), it is not feasible to evaluate the direct removal of denning habitat and habitat fragmentation from gravel mining and placement. Any such future development would be the subject of additional NEPA analysis, during which direct effects on specific habitat areas would be evaluated, based on the proposed development plan. At this stage, only general assessments can be made on the basis of the 2,000-acre gravel placement limit, plus associated gravel mining, somewhere in the leasing program area. Please also see responses to letter 81184, comment 7, and letter 94076, comments 80 and 81.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
249. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	would be long-term in duration. 1474 The DEIS fails to further explain the impact of these direct losses of polar bear habitat, and there is no support for the conclusion that effects would be minimal. BLM must assess the impact of the habitat fragmentation caused by the development of oil and gas facilities spanning hundreds of miles in designated critical habitat on the movements, behaviors, health and distribution of SBS polar bears.	(see above)
250.	Brook	Brisson	Trustees for Alaska	98271	256	Marine Mammals	Additionally, if bears spend more time on land during the open water period, there is potential for increased disease transmission, particularly where bears form aggregations at sites where the remains of subsistence harvested whales are deposited (e.g., Barter Island and Cross Island, Alaska). Such aggregations are also more susceptible to the impacts from potential oil spills. 1475 The DEIS ignores any increased potential for disease transmission or increased susceptibility to oil spills faced by SBS bears using increasingly important land habitat in new ways.	Text has been added to the Final EIS (corresponding to Draft EIS page 3-132) regarding increased risk of disease transmission where bears congregate, such as at whalebone piles, citing the PBCMP (USFWS 2016). Text also has been added regarding risk from marine spills in such areas (see response to letter 97942, comment 73).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
251.	Brook	Brisson	Trustees for Alaska	98271	257	Marine Mammals	BLM's comparison of alternatives focuses on the overlap of leasing areas with mapped suitable denning habitat, rather than impacts within the boundaries of the critical habitat designation of terrestrial denning habitat. ¹⁴⁷⁶ The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species. ¹⁴⁷⁷ However, BLM focuses much of its discussion on what it calls "suitable denning habitat," referring to the potential denning locations themselves, which it states covers only 4,700 acres. ¹⁴⁷⁸ But maternal denning habitat includes, inter alia, corridors between the dens and the coast, and BLM's designation obscures the reality that BLM is only talking about a small portion of the actual critical habitat designated for terrestrial denning. BLM then limits its analysis of infrastructure to only quantify the extent of the industrial footprint within the 4700 acres. This approach likely understates the impacts on denning habitat because disturbance and structures in designated critical habitat may have negative impacts on the mapped denning habitat as well.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.
252.	Brook	Brisson	Trustees for Alaska	98271	258	Marine Mammals	Moreover, analyzing impacts to only mapped suitable denning habitat overlooks the fact that polar bears must move between these riverine corridors to travel to the coast, reach their dens, and seek out food sources. BLM's failure to consider impacts beyond suitable denning habitat artificially limits the scope of its analysis by omitting impacts to critical habitat on the majority of the Coastal Plain.	The varying protections remain in order to analyze a reasonable range of alternatives under NEPA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
253.	Brook	Brisson	Trustees for Alaska	98271	259	Marine Mammals	BLM does not state the distance at which blasting and pile-driving noise would likely be detected by denning or non-denning bears, leaving unexamined the likelihood of the identified potential impacts occurring. As discussed elsewhere, it also fails to evaluate the impacts of seismic testing, including noise impacts on denning bears. The FEIS must evaluate whether winter construction activities such as blasting and pile driving could result in displacement, injury or death to polar bears. If a 2003 report prepared for Exxon measuring noise at artificial dens represents the best available science on the sensitivity of actual denning polar bears to noise, then BLM cannot support a conclusion that all the noise associated with oil and gas activity on the coastal plain, including seismic exploration and winter construction, won't significantly affect polar bears.	Draft EIS pages 3-136 and 3-137 assessed likely impacts based on the best available information on disturbance of denning and non-denning polar bears by noise and visual disturbance from human activities, providing data on bear responses to different stimuli at different distances and citing Amstrup (1993), Blix and Lentfer (1992), MacGillivray et al. (2003), Andersen and Aars (2008).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
254.	Brook	Brisson	Trustees for Alaska	98271	260	Marine Mammals	Other industrial activities and noise will disturb non-denning bears as well. Routine snowmachine noise has been shown to prompt significant avoidance responses in polar bears at distances up to 3,272 meters - over two miles. 1482 Except for male adults, bears studied "typically had a pronounced response and frequently fled snowmobiles and continued to flee the area at lengthy distances." The DEIS notes this study but fails to mention the two-mile response threshold noted for some bears and understates the intensity of the observed fleeing response. 1483 The FEIS must disclose the known snowmachine impacts more transparently and discuss the likely impacts of the many other mobile sources of foreseeable industrial noise on polar bears, including trucks, bulldozers, airplanes, helicopters, etc.	Data from the referenced study (Andersen and Aars 2008) was described on Draft EIS page 3-137, stating mean reaction distances of various sex and age classes of polar bears. The researchers in that study intentionally disturbed bears on sea ice in Svalbard by approaching directly on two snowmobiles traveling at speeds of 18–25 mph, then recording the reactions of the bears and the distances at which responses were noted, as well as the strength of the responses. The authors did not identify a 2-mile "response threshold for some bears"; rather, that was the maximum distance at which a response was noted for any bear. In contrast, the minimum distance was 112 m (367 ft). Text in the Final EIS was revised to include the range of distances (95% CI) at which responses were noted, as well as the fact that intentional disturbance of polar bears by direct vehicle approach is prohibited by the interaction plans required under the ITR/LOA process governing incidental take by industry activities.
255.	Brook	Brisson	Trustees for Alaska	98271	261	Marine Mammals	BLM relies heavily on Incidental Take Regulations that do not yet exist for the Coastal Plain to conclude that noise from industrial activities will have no significant impact on bears. 1484 This reliance is misplaced for at least two reasons. First, the track record pursuant to the Beaufort Sea ITR for disturbances to polar bears is mixed at best, with examples of industry activity disturbing and displacing denning bears along with examples of bears largely unaffected despite fairly close proximity to industrial activity. 1485 The monitoring done pursuant to the ITR provides some useful	Use of the program area by polar bears was described in Draft EIS Section 3.3.5, including trends for increasing use of terrestrial areas and landward, eastward shifts in denning. Monitoring and reporting under the MMPA ITRs (summarized in Federal Register rule notices and USFWS documents such as the Conservation Management Plan 5-year status review, and annual reports) provide the best available information regarding the amount of interaction and incidental take

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
255. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	information but is not designed to measure overall bear responses to various stimuli at different distances in any scientific way. The monitoring information doesn't indicate that behavioral disturbances to polar bears in the Beaufort Sea have been minimal, and certainly doesn't support the conclusion that noise impacts from industrializing the coastal plain — with its unique site characteristics and different and changing usage by polar bears — would be minimal. Second, as FWS notes in the Beaufort Sea ITR, "the distribution and habitat use patterns of polar bears indicates that relatively few animals will occur in the areas of Industry activity at any particular time, and, therefore, few animals are likely to be affected. SBS polar bears are widely distributed, are most often closely associated with pack-ice, and are unlikely to interact with open-water industrial activities..." 1486 These findings are critical to the FWS's "negligible impacts" determination in the Beaufort Sea ITR, 1487 but the same findings cannot be made with regard to the coastal plain. As noted herein and in the DEIS, the coastal plain has become a critically important denning area and will likely be of increasing importance for roaming and foraging as well, as sea ice continues to diminish. It cannot be said that relatively few animals will occur in the areas of industry activity on the coastal plain, or that bear interactions with that activity are unlikely. In short, the coastal plain is completely different than the Beaufort Sea ITR area in terms of the likely impacts on polar bears, and the Beaufort Sea experience to date offers little assurance that those impacts will be insignificant.	associated with oil and gas industry activities in northern Alaska. No comparable published documents are available on which to base impact assessments regarding interactions with industry activities. The ITR quote in the comment regarding open-water activities is relevant to the vessel/barging activity described in the Draft EIS. As is noted in other responses, a new ITR rulemaking is required before seismic exploration and development activities can proceed in the program area, and those ITRs will require a determination of negligible impact for the SBS stock of polar bears.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
256.	Brook	Brisson	Trustees for Alaska	98271	263	Marine Mammals	While the DEIS acknowledges that oil and gas activities lead to more human-bear encounters, it relies on extremely dated information to downplay the effects of those activities. The DEIS cites polar bear sighting and hazing statistics from 2005 to 2008, ignoring the last 10 years of oil and gas activities. 1492 It also relies on a 2003 source to say that oil and gas activities have not affected polar bears and ringed seals, 1493 despite the fact that the cumulative effects of climate change and oil and gas activities were significantly lower fifteen years ago.	Draft EIS page 3-148, paragraph 4, specifically focused on offshore facilities and activities with regard to cumulative effects, citing the most recent ITR rulemakings published in the Federal Register, as well as the cumulative effects review by the National Research Council published in 2003. No comparable published analyses could be located for review in preparing the Draft EIS.
257.	Brook	Brisson	Trustees for Alaska	98271	264	Marine Mammals	BLM also failed to assess and disclose the potential threats to polar bears from oil spills. The EIS states that accidental spills, leaks, and other sources of contamination are a potential source of injury or mortality, but brushes aside the potential impacts by relying on assumptions that any spill would be small, on-land, and cleaned up quickly. 1494 The assumptions underlying BLM's discussion of oil spills are faulty, and BLM underestimates the potential environmental damage from spills on the Coastal Plain. 1495	The impacts of terrestrial spills were based on experience to date in the existing North Slope oil fields. Please see response to letter 97942, comment 73. At the time of a site-specific proposal, the operator will be required to submit an oil discharge prevention and contingency plan (required by the State of Alaska), which will address oil spill containment and recovery.
258.	Brook	Brisson	Trustees for Alaska	98271	265	Marine Mammals	Further, BLM states that "[s]pills associated with development projects on the mainland are of much less concern for polar bears than are marine spills." 1496 This finding seemingly ignores the fact that polar bears are spending more time onshore due to climate change, so terrestrial spills are increasingly likely to affect their habitat and prey.	The risk of marine spills to polar bears was discussed, with supporting citations, in the Draft EIS paragraph preceding the one from which the quote was taken in the comment. Text has been clarified to describe the higher rate at which marine spills may spread compared with terrestrial spills.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
259.	Brook	Brisson	Trustees for Alaska	98271	269	Marine Mammals	Despite the foregoing, BLM largely ignores the effects of noise, vibration, human presence and other disturbance to polar bears produced by seismic exploration activities. BLM only mentions such impacts when describing mitigation measures it assumes will be implemented via ITRs that do not currently exist. For instance, the EIS states that “[d]en surveys using FLIR sensors or trained dogs would be conducted annually before seismic exploration and construction of roads and pads commenced in the program area...” ¹⁵¹¹ BLM cannot assume that such measures are wholly effective given recent research demonstrating the shortcomings of these surveys. FLIR surveys, while more effective at detecting polar bear dens than visual observations, cannot identify all of them. As described by Dr. Steven Amstrup, research suggests that a 50% detection rate is probably close to the highest that could reasonably be expected from FLIR surveys.	Please see responses to letter 81184, comment 4, and letter 81368, comments 33 and 42.
260.	Brook	Brisson	Trustees for Alaska	98271	271	Marine Mammals	While BLM does later acknowledge that FLIR surveys and dog detection “do not provide perfect detection and occupied maternal dens are sometimes missed in preconstruction surveys,” ¹⁵¹⁴ nowhere does BLM attempt to quantify the likelihood of missing dens. The EIS merely states that “complete detection of occupied bear dens is unlikely to be achieved, so an unknown (though probably small) number of denning bears could be exposed to disturbance until discovered by such operations every winter during exploration, construction, and development drilling phases.” ¹⁵¹⁵	Please see response to letter 81368, comment 42.

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261.	Brook	Brisson	Trustees for Alaska	98271	272	Marine Mammals	Exposing half of the maternal dens located within a proposed seismic survey area to disturbance and potential crushing cannot be considered a small number. This is particularly true when a seismic survey will cover an extensive area within the Coastal Plain within a given denning season. And the disturbance is not necessarily temporary — i.e. lasting only “until discovered by such operations.” If a den is abandoned or left earlier than it otherwise would have been, the “discovery” is too late and the significant harm, possibly lethal harm, is done.	Please see responses to letter 81184, comment 4, and letter 81368, comments 33 and 34.
262.	Brook	Brisson	Trustees for Alaska	98271	273	Marine Mammals	Finally, BLM fails to consider the efficacy of the use of dogs for den detection. For practical purposes, the use of the dogs is limited to confirming whether a suspected den already identified by the FLIR survey is actually occupied by a polar bear. Dogs cannot find dens that were not detected by the FLIR survey, because researchers would have to tread over nearly every square foot of an enormous area with the dogs. Further, the dogs must be transported via vehicles that can cause disturbance to undetected dens. The dogs themselves can also cause den disturbance when they alert to a den by starting to dig. 1516 For purposes of a seismic survey of a large area within the complex habitat of the Coastal Plain, dog detection will be of limited utility to mitigate adverse impacts to polar bears. 1517	Please see responses to letter 81368, comments 45 and 46.
263.	Brook	Brisson	Trustees for Alaska	98271	276	Marine Mammals	Since it ignores the additive distance that SBS bears will need to travel from sea ice to denning habitat, the DEIS does not estimate the energetic loss or nutritional stress that polar bears will have to overcome nor assign any expected additive mortality due to this dynamic. The DEIS thus understates the likely consequences for SBS bears.	This information was not ignored. Text on Draft EIS page 3-125 described increased movements related to diminished sea-ice cover and pages 3-131 and 3-132 described climate-change-related effects on polar bears, including increased energy expenditure and nutritional stress related to sea-ice decline.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
264.	Brook	Brisson	Trustees for Alaska	98271	279	Marine Mammals	In addition to cumulative impacts from climate change, polar bears in the SBS population face cumulative impacts from a wide range of industrial activities, including onshore and offshore oil and gas development and increased shipping. BLM has failed to identify and assess the many ongoing and reasonably foreseeable oil and gas activities that will affect polar bears, including increased onshore oil development in the NPR-A, including CD-5, GMT-1, GMT-2, and Willow. The impacts and disturbance to polar bears due to oil and gas activities in the NPR-A may be further exacerbated if DOI moves ahead with its attempt to reopen and revise BLM's Integrated Activity Plan. As envisioned by DOI, this plan would open more areas in the Reserve to leasing and oil and gas activities, including in sensitive environmental areas near the coast. BLM also failed to fully consider impacts from increasing development on state lands adjacent to the Reserve; the Liberty offshore island in the Beaufort Sea; and a new Five-Year Plan for Offshore Oil Development that includes lease sales in the Beaufort Sea.	Commenter is referred to Draft EIS Appendix F, pages F-8 and F-9, where the Alpine CD-5, GMT-1, GMT-2, Willow, and Liberty projects all were described as RFFAs. The referenced projects in NPR-A are located farther inland in areas where polar bear activity is much less common than in the program area. The NPR-A IAP revision was not included as an RFFA at the time the Draft EIS was written, but has since been added to Appendix F.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
265.	Brook	Brisson	Trustees for Alaska	98271	287	Marine Mammals	The DEIS misleadingly implies that NSO stipulations will "protect" between "29 percent of the potential maternal denning habitat mapped in the program area" (under Alternative B) and 54 percent (under Alternative D), and that a total of 82 percent of the maternal denning habitat will be protected under Alternative D when combining the NSO with the areas not offered for lease. 1545 The DEIS fails to acknowledge or evaluate how oil and gas development on areas adjacent to the NSO and unleased locations will affect access to and viability of the maternal denning habitat itself. There is no analysis of the reach of impacts from areas where surface oil and gas activities will be allowed. A proper analysis minimally would require mapping the areas where surface oil and gas activities will be allowed and then evaluating how much habitat falls within a buffer distance from those locations, where the buffer distance reflects some scientifically determined estimate of the distance required to ensure the habitat will be safe from various forms of harm resulting from those activities.	Post-leasing activities in the program area will require new ITRs and an associated Biological Assessment and Biological Opinion to minimize impacts on polar bears. Future ITRs will be required to reach a determination of negligible impact on the SBS stock of polar bears. When promulgated, future ITRs will specify mitigation measures to eliminate or reduce impacts on polar bears, as described in Section 3.3.5, Direct and Indirect Impacts, and in Appendix J in the Final EIS. Please see responses to letter 81184, comment 4, and letter 81368, comments 32 and 34. That 1-mile buffer zone was used to craft some of the NSO restrictions in areas that have been most heavily used by denning bears in the past. The "reach of impacts" was described in the Draft EIS impact assessment subsections dealing with maternal denning, disturbance and displacement, and injury and mortality.
266.	Brook	Brisson	Trustees for Alaska	98271	288	Marine Mammals	Moreover, the approach in the DEIS is misleading because it refers only to the mapped potential denning habitat rather than to the terrestrial denning critical habitat. The DEIS thereby improperly ignores the important role that the surrounding critical habitat plays in supporting the maternal denning locations, and misleadingly inflates the benefit of the NSO stipulations.	Please see response to letter 97942, comment 70.

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267.	Brook	Brisson	Trustees for Alaska	98271	297	Marine Mammals	It is unclear why BLM believes the probability of lethal impacts to seals is low given the known presence of seals in the area and the difficulty in detecting and avoiding lairs; BLM should clarify that lethal impacts are quite possible and explain how they will be prevented. We also note that any lethal take of ringed seals would require an incidental take permit pursuant to the MMPA, which BLM entirely fails to acknowledge in the DEIS.	ROP 10 has been revised to include measures to reduce the probability of taking seals. These measures include seal surveys, buffers around known lairs, transportation buffers to avoid disturbing seals hauled out on land or ice, vessel speed restrictions, and use of Protected Species Observers.

S.3.22 NEPA

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Bob	Nebel	—	60095	1	NEPA (National Environmental Policy Act)	The executive SUMMARY needs to summarize the significant effects of the action. That is the meat of the matter!! Too often EISs do not summarize the significant effects in the executive summary. This needs to change. I hope this FEIS will accomplish this outstanding need; otherwise it will be incomplete	The Executive Summary has been updated appropriately for the Final EIS.

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2.	Withheld	Withheld	—	79883	1	NEPA (National Environmental Policy Act)	The Government of Yukon requests that a supplemental EIS to the draft EIS be prepared. Per the 2005 Council on Environmental Quality guidance, a supplemental EIS must be considered when "There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Government of Yukon requests this for the following reasons: * We have identified significant new information in the independent vulnerability Porcupine caribou herd assessment, which identifies a high risk to herd sustainability; *The draft EIS presents inadequate alternatives as a result of inaccuracies or deficiencies in information; * The lack of quantitative analysis in the draft EIS has led to an incomplete understanding of effects and therefore poorly informed the construction of project alternatives; * No alternative was presented that analysed the 800,000 acre minimum lease area requirement identified by Public Law 115-97. All action alternatives exceed the area minimum; and * A comprehensive transboundary effects assessment is missing from the draft EIS.	The independent caribou assessment does not constitute significant new circumstances or information warranting an EIS supplement. Alternative D2 has been revised to offer 800,000 acres of land for leasing. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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3.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	2	NEPA (National Environmental Policy Act)	the DEIS does not establish a sufficient scientific and analytic basis for comparison of alternatives under §1502.14 of NEPA. Determinations that are not based on relevant data and peer-reviewed analyses must be considered arbitrary and capricious. EISs usually take 4.5 years, but it appears that BLM is attempting to complete the entire EIS for these leases in one year, a limitation that is entirely inappropriate to a project of this scale in a region as sensitive as the arctic that supports cultures that have been subsisting on the land for thousands of years. To perform its basic scientific and analytic function under §1502.14 of NEPA, the final EIS must conduct new research, fill in the data gaps identified by the U.S. Geological Survey Report, and submit all research to peer review.	The Final EIS contains adequate, high quality and accurate scientific analysis, and includes all relevant peer-reviewed scientific literature, in compliance with 40 CFR 1500.1(b) and 1502.24. The data gaps described in the report are not essential to a reasoned choice among the alternatives in the Leasing EIS. This is particularly the case given the current leasing stage.
4.	Lisa	Baraff	Northern Alaska Environmental Center	74306	6	NEPA (National Environmental Policy Act)	In addition, by condensing the NEPA process in time and scope, BLM opted to incorporate numerous documents by reference, yet failed to adequately summarize or provide access to those documents to enable review and analysis by the reader. Omitting detailed descriptions and analyses of information ostensibly pertinent to impact determination on the Coastal Plain by merely referencing analysis previously conducted for other NEPA documents (e.g., the SEIS for GMT2 or the Effects of Oil and Gas Activities in the Arctic Ocean FEIS) is problematic. The documents are not readily available to the public and are difficult to navigate in a timely manner, if they are available.	Section numbers have been added to citations for planning documents that are incorporated by reference. Full citations of documents are included in the reference list, and are available online.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Ruth	Wood	—	92475	6	NEPA (National Environmental Policy Act)	A bigger problem is that this Draft EIS should cover only one lease sale. Public Law 115-97 calls for one lease sale in 4 years and another in 7 years. If a lease sale is allowed to proceed, and I assert that it should not, then things learned from the first lease sale should be used to draft an EIS for the second.	Given that leasing typically precedes development by at least ten years and that a second lease sale must be held by December 2024 pursuant to PL 115-97, when holding the second lease sale there would be little or no opportunity to apply lessons learned from observing the impacts of development that may result from leases issued in the first sale.
6.	Ruth	Wood	—	92475	7	Purpose and Need	The Draft EIS says, "This Draft EIS is intended to fulfill NEPA requirements for lease sales conducted at least through December 2027 and potentially thereafter. Before it conducts the second and each subsequent lease sale, the BLM will evaluate the adequacy of the Draft EIS in light of new information and circumstances to determine whether it requires supplementation or revision in order to comply with NEPA" (from volume 1, I-5.) First, the clause "and potentially thereafter" should be deleted from the Draft EIS. As stated, the Draft EIS would fulfill NEPA requirements forever, and that clearly does not make sense. Second, this clause says the second and each subsequent lease sale. Only two sales have been authorized, so this language needs to be fixed. I understand that BLM thinks it may employ a phased approach, but this whole section is unclear and needs to be rewritten.	The Leasing EIS may be used to support lease sales for as long as it remains adequate in light of new information and circumstances. PL 115-97 does not limit the number of lease sales that may be conducted under the oil and gas program. It only sets a minimum number of required sales, providing that "not fewer than 2 lease sales" must be conducted within 10 years of its enactment.
7.	Jason	Schwartz	Institute for Policy Integrity	80216	7	NEPA (National Environmental Policy Act)	The DEIS provides only a vague description of how it calculated royalty revenue, and the document it relies on, Northern Economics Inc. 2018,59 has not been made available to the public.	The reference document for Northern Economics, Inc. 2018 is unavailable because the information provided in the Draft EIS is a result of modelling by the BLM contractor Northern Economics, Inc. and consists of proprietary data prohibited from release by the Trade Secrets Act.

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8.	Withheld	Withheld	—	59376	8	NEPA (National Environmental Policy Act)	Could you clarify what is/is not part of the action and what is/is not to occur upon issuance of a lease? Specifically, Draft EIS Table 2-2 speaks to both seismic and exploratory drilling as subsequent phases, but in the news recently we heard seismic testing was underway this month in the ANWR coastal plain until it got delayed due to inability of obtaining DoI authorization. How is seismic testing being considered outside of the EIS process?	The Leasing EIS primarily analyzes impacts that may occur as a result of leasing, to include impacts from seismic surveys that may be conducted on leased lands. However, seismic exploration can be conducted absent a lease (a lease is not required). Even if areas are not available for lease, companies may apply to conduct seismic exploration there. SAExploration's proposed seismic survey is analyzed in the Leasing EIS's cumulative effects analysis. A separate NEPA analysis would be completed for all seismic exploration applications, which would analyze the project and site specific impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Brook	Brisson	Trustees for Alaska	96981	8	NEPA (National Environmental Policy Act)	BLM's leasing approach for the Coastal Plain, and in particular the process for holding a lease sale, is very unclear. In the Reasonably Foreseeable Development Scenario in the draft EIS, BLM states that it is assuming that the first lease sale would take place within a year of adoption of the ROD. ³⁸ BLM also states that the ROD will authorize multiple lease sales, and that lease sales will take place after the ROD is issued. ³⁹ BLM goes on to say that not all lands identified in the ROD may be offered for lease. ⁴⁰ But, in outlining the decisions to be made, BLM states that the decision in the ROD "will include which tracts of land will be offered for lease." ⁴¹ Thus, it is unclear if the ROD will identify specific tracts for companies to bid on, or if BLM will follow the process that it employs in the NPRA of having distinct processes, where it completes the entire programmatic-level EIS process, and then engages in a separate public process of identifying specific tracts to offer for bidding. ⁴² BLM must lay out and explain this process before moving to a final EIS.	As with the NPR-A IAP/EIS, the Leasing EIS contains both programmatic and implementation level elements. Similar to the NPR-A IAP/EIS, the Leasing EIS is intended to satisfy NEPA compliance for at least the first sale, and likely the second and possibly subsequent sales. Before conducting the second or subsequent sales BLM will evaluate the continuing adequacy of the Leasing EIS in light of any new and potentially significant information and circumstances that may arise subsequent to the issuance of the Final EIS, in accordance with 43 CFR 46.120(c). As is done for NPR-A, the ROD will determine which areas are available for lease and thus may be offered in any given sale, whereas specific tracts to be offered in each sale will be identified prior to the particular sale in the Detailed Statement of Sale, using information received in response to a Call for Nominations and Comments.

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10.	Brook	Brisson	Trustees for Alaska	96981	9	NEPA (National Environmental Policy Act)	BLM's website outlines a process for the Coastal Plain Leasing EIS that includes a call for nominations coming with notice of the draft EIS or prior to publication of the final EIS and indicates that the ROD will be issued concurrently with a lease sale notice. ⁴³ But recent comments from Assistant Secretary for Land and Minerals Management Joseph Balash indicate that the call for nominations will be concurrent with the issuance of the final EIS. ⁴⁴ Again, BLM must clarify its approach to leasing with specificity, ensuring that all steps involve public notice and participation, and appropriate analysis.	As with the NPR-A IAP/EIS, the Leasing EIS contains both programmatic and implementation level elements. Similar to the NPR-A IAP/EIS, the Leasing EIS is intended to satisfy NEPA compliance for at least the first sale, and likely the second and possibly subsequent sales. Before conducting the second or subsequent sales BLM will evaluate the continuing adequacy of the Leasing EIS in light of any new and potentially significant information and circumstances that may arise subsequent to the issuance of the Final EIS, in accordance with 43 CFR 46.120(c). As is done for NPR-A, the ROD will determine which areas are available for lease and thus may be offered in any given sale, whereas specific tracts to be offered in each sale will be identified prior to the particular sale in the Detailed Statement of Sale, using information received in response to a Call for Nominations and Comments.

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11.	Withheld	Withheld	—	59376	23	NEPA (National Environmental Policy Act)	(1) The Draft EIS emphasizes that the pro-proposed action is only the issuance of leases and that future NEPA analysis would be required. But, the EIS suggests that BLM may handle some determinations as a permit administration matter (e.g. waiver, exception, modification, reasonable requirements under the regulations). Could future, anticipated, site specific NEPA analysis be overcome by an internal BLM finding that the future actions are within the scope of the existing NEPA or are to be handled within the existing permit as a permit administration matter? (2) To what extent would site-specific actions be within the scope of this EIS such that the public would not get another opportunity to comment? (3) It seems that this Draft EIS is more of a program EIS and future site specific proposals would be able to tier from it or be within its scope.	Except in cases where a categorical exclusion applies, all future on-the ground actions will require additional, project and site-specific NEPA analysis, which may in some cases tier from the Leasing EIS or incorporate it by reference.
12.	—	—	Alaska Department of Natural Resources	94102	25	NEPA (National Environmental Policy Act)	1 Executive Summary, ES-3, Paragraph 6 Insufficient description of development scenario in Executive Summary Paragraph six on this page is titled "hypothetical development scenario" but that title is misleading, because the scenario is not described, and the reader must find the details of the actual scenario in Appendix B. CEQ regulations at 40 C.F.R. 1502.12 states that "each environmental impact statement shall contain a summary which adequately and accurately summarizes the statement. The summary shall stress the major conclusions, areas of controversy, and the issues to be resolved." Because the rest of the draft EIS documents is based upon addressing the impacts and consequences of this hypothetical development scenario, it would be important to provide a brief summary of the hypothetical scenario so that the reader has a clear understanding of what is being discussed, rather than having to search for an appendix which does not provide any clearer summary.	Executive Summary has been revised to include a description of the hypothetical development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Brook	Brisson	Trustees for Alaska	96981	33	NEPA (National Environmental Policy Act)	Importantly, the new and revised alternatives that will be necessary to remedy these significant gaps will not be "minor variation[s]" of the existing alternatives that are "qualitatively within the spectrum of alternatives that were discussed in the draft." ¹¹⁴ To remedy the inadequate range of alternatives, a revised draft EIS is necessary.	All alternatives analyzed in detail in the Final EIS are either the same as the alternatives presented in the Draft EIS or are a minor variation that is qualitatively within the spectrum of the Draft EIS alternatives (40 CFR 1502.9(c)(1)).
14.	Brook	Brisson	Trustees for Alaska	98269	46	NEPA (National Environmental Policy Act)	The DEIS fails to disclose that the Canadian governmental comments expressed grave concerns and opposition to oil and gas drilling in the Coastal Plain because of the potentially disastrous transboundary impacts on the PCH and the indigenous people that rely on the Herd for material, cultural, and spiritual sustenance.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The Final EIS has identified and responds to each substantive comment, including Canadian governmental comments.
15.	Peter	Stern	—	69296	57	NEPA (National Environmental Policy Act)	Page 3-195 The discussion about EO 12898 should show why decision making, post this EIS for exploration, development, production and waivers should require the BLM to use NEPA environmental impact statement process rather than environmental assessment. It is critical that public hearings be required when considering decisions that affect the Gwich'in people.	Until the BLM receives a proposal for exploration or development, there is insufficient information to determine the appropriate level of NEPA analysis.

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16.	Brook	Brisson	Trustees for Alaska	96981	57	NEPA (National Environmental Policy Act)	NEPA's twin aims are to facilitate informed government decision making and ensure public transparency. ¹⁶⁴ Courts have held that those aims are undermined and a violation of NEPA has occurred where an agency "pre-determines" the outcome of the analysis by "irreversibly and irretrievably commit[ting] itself to a plan of action" before completing the necessary analysis. ¹⁶⁵ As described above, the draft EIS contemplates only those alternatives that would achieve a pre-determined outcome of making substantial portions of the Coastal Plain available for oil and gas leasing and development. Each of the alternatives would result in similar levels of production and infrastructure and the same faulty interpretation of the 2,000-acre cap on surface disturbance. Moreover, BLM's anticipated permitting of pre-leasing 3D seismic operations across the entire Coastal Plain further illustrates the agency's commitment to pursuing only intensive development scenarios that go far beyond the requirements of the Tax Act. To avoid improper pre-determination, BLM must develop and meaningfully analyze the alternatives described above.	Section 20001(c)(3) of the Tax Act states "the Secretary shall authorize up to 2,000 surface acres." Any interpretation by the BLM to modify the limit for a given alternative would be inconsistent with the Tax Act. The BLM has modified its interpretation of the 2000-acre facility limit to include gravel mines.

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17.	Brook	Brisson	Trustees for Alaska	96981	60	NEPA (National Environmental Policy Act)	BLM states that "where information is missing, this EIS complies with 40 CFR 1502.22."172 In order for BLM to be able to move forward in the face of missing or incomplete information, the agency is required to take specific steps.173 But nowhere in the draft EIS does BLM actually identify information or data gaps or make the required findings to allow it to move forward in the face of that missing or incomplete information. As described in our scoping comments and throughout these comments, much of the information necessary to assess the potentially significant impacts of the leasing program is missing, and BLM must comply with the applicable regulation when assessing the leasing program in the face of this missing information.	Appendix Q has been added to address incomplete or unavailable information per 40 CFR 1502.22.
18.	Brook	Brisson	Trustees for Alaska	96981	79	NEPA (National Environmental Policy Act)	BLM makes conflicting statements about the exact scope of the authority it will retain under any leases. On the one hand, BLM states that issuance of a lease constitutes an irreversible and irretrievable commitment of resources.243 On the other hand, BLM claims that it retains at each decision stage "the authority to approve, deny, or reasonably condition any proposed on the ground-disturbing activity based on compliance with the terms and conditions of the lease and applicable laws and policies."244 Because BLM has failed to provide even a template lease, and provides conflicting statements about the nature of the right it is granting under the leases, the public is unable to meaningfully determine the exact nature of these leases or whether BLM has truly retained the right to later preclude all activities on those leases. This is particularly concerning in light of how BLM has proceeded with issuing leases in the NPRA. In the NPRA, BLM has issued leases constituting an irretrievable commitment of resources, without first conducting a site-specific NEPA	BLM's statements are factually correct, and not in conflict. Leases grant rights to explore and develop, subject to reasonable regulation. Such activities must comply with the terms and conditions of the lease and applicable laws, as well as project specific conditions. If they do not, they can be denied.

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18. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	analysis; once development projects have arisen, BLM claims that it no longer retains the right to deny development proposals by adopting the no action alternative because "oil and gas leases provide a right of development."245 BLM cannot play that shell game here. BLM needs to either fully retain the authority to preclude all activities pending submission of later site-specific proposals - i.e., not make an irretrievable commitment of resources - or conduct a far more robust, site-specific analysis at this stage. Put another way, BLM should acknowledge the difference between retaining authority to deny a particular application for a permit to drill or conduct other activities pursuant to a lease, and retaining the authority to preclude development altogether, even if that means barring access to some or all of the oil and gas associated with the leased parcel. Anything short of the latter irretrievably commits resources because some amount of damage will inevitably occur for the lessee to explore and extract the oil and gas resources. If BLM is granting rights with its leases and not retaining the authority to deny all activities, the exercise of those rights is a direct effect of this decision, which is contrary to BLM's often-repeated statement throughout the EIS that granting leases does not have direct impacts.246	(see above)
19.	—	—	Alaska Department of Natural Resources	94102	92	NEPA (National Environmental Policy Act)	52 Glossary, Page 12 Clarification No-Surface-Occupancy (NSO). This definition needs to be modified for clarity as certain essential surface facilities are allowed in or allowed to cross NSO areas within Lease Stipulations and ROPs. These facilities include essential roads and pipelines, docks, and seawater treatment plants. Add: Facilities such as essential roads, pipelines, a dock, and a seawater treatment/desalinization plant may be allowed in these areas on a case-by-case basis.	The following text was added to the definition in the glossary: "Facilities such as essential roads, pipelines, a dock, and a seawater treatment/desalinization plant may be allowed in these areas on a case-by-case basis."

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20.	Peter	Stern	—	69296	98	NEPA (National Environmental Policy Act)	In the cover letter to the Environmental Impact Statement, "The action alternatives discussed in the Leasing EIS include lease stipulations and required operating procedures designed to mitigate impacts on natural resources and their uses. All future on-the-ground actions requiring BLM approval, including potential exploration and development proposals, will require further National Environmental Policy Act (NEPA) analysis based on the site specific proposal." discussed in the Leasing EIS include lease stipulations and required operating procedures designed to mitigate impacts on natural resources and their uses. All future on-the-ground actions requiring BLM approval, including potential exploration and development proposals, will require further National Environmental Policy Act analysis based on the site specific proposal." This statement makes it sound like NEPA will provide the same guidance/process for decision making that this Environmental Impact Statement has had. According to a news story in the Fairbanks Daily News Miner, Sat Mar 2, 2019 on page 3, titled "Nuiqsut sues federal government over plans to drill more wells", a winter exploratory/drilling plan Conoco was submitted to the BLM for drilling in NPRA. The BLM has chosen to use an expedited environmental assessment process rather than requiring an environmental impact statement. This is important because BLM is likely to use the same tactic in approving plans for exploration, development and production in the 1002 area regardless of which alternative is selected. ES-1 "Future on-the-ground actions requiring BLM approval, including potential exploration and development proposals, would require further NEPA analysis based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM	Until BLM receives a proposal for exploration or development, there is insufficient information to determine the appropriate level of NEPA analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project level NEPA analysis." This language is ambiguous enough to allow BLM to avoid the environmental impact statement level of approval for future plans." Using an environmental assessment process cuts out the public hearing process as well as not mandating govt to govt meetings between BLM and the entities listed as being part of the impact statement effort. This absolutely should not be allowed. Within this impact document, Nuiqsut is used as an example of a village that will suffer little impact from this drilling in ANWR and has experienced minimal impact caused by development located near by the village. Nuiqsut has been exposed to enough impacts that BLM's actions in approving drilling plans in NPR-A are being challenged. Introduction page 1-1 discusses the BLM intent to compare the 1002 ANWR development process to that used with NPR-A. Giving development the history within NPR-A, that is not a positive example to follow. Introduction 1-2 "Future on-the-ground actions requiring BLM approval, including potential exploration and development proposals, would require further NEPA analysis based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project level NEPA analysis." This language occurs many places within this document. It is clear BLM wants the power to use whatever decision making process under NEPA that it deems applicable and useful for resulting in expedited time lines. This should not be allowed! Environmental Impact Statements should be the level used in	(see above)

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20. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	approving plans at the various stages of exploration, development and production.	(see above)

S.3.23 Other Laws

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	57282	1	Other Laws	Drilling the Refuge is in violation of international law, which protects communities from any act by the state that would deny them their means on subsistence. This right is codified in the International Covenant on Civil and Political Rights, Article 1, to which the US is party. The ICCPR also ensures the right to self determination (Article 1), and the right to life (Article 2). Because this policy specifically targets and disregards the Gwich'in population, it can be considered racially discriminatory, in violation in the International Convention on the Elimination of all Forms of Racial Discrimination, another convention to which the US is party. The Gwich'in people have attempted to speak with lawmakers and have been met with derision. As indigenous peoples, they have a right to free, prior and informed consent. This consent has not been recieved, directly opposing soft law codified in the United Nations Declaration on the Rights of Indigenous Peoples.	The leasing program will not restrict the ability of subsistence users to continue subsistence practices.
2.	Debbie	Miller	—	76288	1	Other Laws	To comply with the Porcupine Caribou Management Agreement, no development can be allowed on the coastal plain of the Arctic Refuge, the birthplace and nursery ground of the Porcupine Caribou Herd. The United States would be in violation of this international agreement if development proceeds.	The Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd (1987) does not preclude development.

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3.	Withheld	Withheld	Government of the Northwest Territories	92862	1	Other Laws	The GNWT requests that specific consideration be given to the International Porcupine Caribou Agreement (IPCA) and the Alaska National Interest Lands Conservation Act in light of the fact that no consultations occurred with potentially affected communities in Canada.	The EIS gives due consideration to the IPCA and ANILCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
4.	Johanna	Hamburger	Animal Welfare Institute	98268	1	Other Laws	The Bureau of Land Management ("BLM") should take the Alaska Geobotany Center's Report, as well as the two judicial opinions, into account as it finalizes the Draft Environmental Impact Statement ("DEIS") for the Coastal Plain Oil and Gas Leasing Program in Alaska. See 83 Fed. Reg. 67337 (Dec. 28, 2018). 1 Walker, D.A., et al., Likely Impacts of Proposed 3D-seismic Surveys to the Terrain, Permafrost, Hydrology, and Vegetation in the 1002 Area, Arctic National Wildlife Refuge, Alaska, Alaska Geobotany Center 1 (2019). 2 Citizens for a Healthy Community v. U.S. Bureau of Land Mgmt., 17-cv-2519 (D. Colo. Mar. 27, 2019); WildEarth Guardians v. Zinke, 16-cv-1724 (D.D.C. Mar. 19, 2019).	The Final EIS takes into account all relevant NEPA case law and scientific literature.

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5.	Donald	Pendergras	—	75129	2	Other Laws	While the Tax Act is the law of the land it does not supersede other laws and regulations, it must act in concert with them. For example: 1. The Wild and Scenic Rivers Act (1968). The US Fish and Wildlife Service is mandated to maintain current conditions for existing Wild and Scenic Rivers and suitable rivers until Congress decides not to include them in the Wild and Scenic system. The rivers mentioned above, Hulahula, Kongakut, and the Marsh Fork of the Canning, must be protected an undiminished. 2. The National Wildlife Refuge Improvement Act (1997) requires every refuge to develop and follow a Comprehensive Conservation Plan (CCP). The Arctic National Wildlife Refuge completed a revision of their CCP in 2015. This document was years (not months) in development and was thoroughly vetted in the NEPA process. Any conflicts with the Tax Act of 2018 and the Arctic Refuge CCP must be adjudicated prior to leasing for oil and gas development.	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. The CCP does not govern BLM's implementation of the oil and gas program. The USFWS will be revising the CCP to make it consistent with the Tax Act.
6.	Debbie	Miller	—	76288	2	Other Laws	ny development of the Arctic Refuge coastal plain would be in violation of two international agreements: 1) The 1987 Porcupine Caribou Herd Agreement between Alaska and Canada sets up a framework to manage and conserve the Porcupine Herd whose range is shared by Alaska, and Canada's Yukon and Northwest Territories. All of the Porcupine Caribou Management Agreement Parties have unanimously agreed that development of the Arctic Refuge should not be allowed because of the detrimental effect it will have on the Porcupine Caribou Herd. Canada opposes opening the Arctic Refuge to oil drilling, along with many villages and tribes in Alaska, the Yukon Territory and Northwest Territories.	The Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd (1987) does not preclude development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Withheld	Withheld	World Wildlife Fund	81184	2	Other Laws	Further, the natural and cultural assets of the Arctic Refuge, which are cherished by Americans throughout the country, include qualities that are deeply valued by citizens of other nations. These commonly held values are reflected in the numerous treaties and international agreements into which the U.S. has entered with other countries, which focus on, among other things, the shared conservation and management of caribou and polar bears.(See 1987 International Porcupine Caribou Herd Agreement (providing for the coordinated conservation of Porcupine caribou herd by the United States and Canada), and the 1973 Agreement on the Conservation of Polar Bears (ensuring adequate coordination with Canada, Denmark, Norway, and Russia to protect polar bears that could be affected by oil and gas leasing in the Arctic Refuge Coastal Plain). See also the 1988 Inuvialuit-Inupiat Agreement (reaffirmed in 2000) (ensuring conservation of the Southern Beaufort Sea polar bear subpopulation).) BLM has failed discuss the implications of the planned leasing program on its duties under these treaties and agreements.	All applicable agreements are addressed in the Final EIS.
8.	Withheld	Withheld	Alaska Wilderness League	81382	2	Other Laws	BLM's draft EIS fails to give effective consideration to several international agreements that the U.S. has entered into with other countries, which focus on, among other objectives, coordinated management of transboundary impacts to species that will be affected by the proposed oil and gas activities on the Coastal Plain. BLM has failed to explain its duties under these treaties and agreements, much less discuss their implications on which tracts BLM offers for lease.	All applicable agreements are addressed in the Final EIS.

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9.	Jenna	Jonas	—	97882	2	Other Laws	Oil and gas development would threaten the treaty that the US and Canada have related to managing and protecting the Porcupine Caribou herd. This plan fails to meet our treaty requirement stated in E100687- CTS 1987 No. 31 that "The Parties should avoid or minimize activities that would significantly disrupt migration or other important behavior patterns of the Porcupine Caribou Herd or that would otherwise lessen the ability of users of Porcupine Caribou to use the Herd."	The Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd (1987) does not preclude development.

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10.	Thomas	Carper	United States Senate	98267	2	Other Laws	As the lead agency responsible for managing the oil and gas program on the Coastal Plain of the Arctic Refuge, BLM must also ensure the entire planning process complies with the National Environmental Policy Act (NEP A), the National Wildlife Refuge System Administration Act, the Endangered Species Act (ESA), and the MMPA, among other binding legal authorities. BLM's proposed program is insufficient with regards to legal mandates governing National Wildlife Refuges and the National Wildlife Refuge System. While the Tax Cuts and Jobs Act established an oil and gas program as a purpose of the Arctic National Wildlife Refuge Coastal Plain, it did not elevate that purpose over any of the four conservation purposes Congress established in the Alaska National Interest Lands Conservation Act or the original three purposes of the Arctic National Wildlife Range from 1960. BLM cannot arbitrarily elevate this single purpose over any of the other specific purposes of the Arctic Refuge or the statutory purposes for the National Wildlife Refuge System recognized by Congress in the National Wildlife Refuge System Administration Act. Similarly, while the Tax Cuts and Jobs Act established BLM as the managing agency for the oil and gas program, it did not otherwise alter the U.S. Fish and Wildlife Service's (FWS) jurisdiction as the Refuge's administrator and manager, as that role has been recognized and affirmed by Congress. The oil and gas program that BLM is proposing may not allow FWS to play this superior role. BLM should respect its new, but limited, role for the oil and gas program.	Applicable laws are addressed in Appendix D. Agency roles and responsibilities are outlined in Chapter 1. The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1) when making oil and gas program decisions, Section 20001(a)(2) and (b)(2)(A) of the Tax Act assigns BLM the sole responsibility for making such decisions.

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11.	David	MacMartin	Gwich'in Tribal Council	75581	3	Other Laws	The absence of consideration of Gwich'in TK in the draft Leasing EIS also highlights the broader issue deficiency of the document in not addressing transboundary implications of the proposed oil and gas leasing program. The vertical borders on the map imposed by newcomers bear no resemblance to either traditional Gwich'in traditional territory, or to the territory over which the Porcupine Caribou range during their annual and seasonal migration to and from their birthing and calving areas in the Alaskan Coastal Plain. Porcupine Caribou do not recognize international borders. Nor will the potential effects of implementing the proposed oil and gas leasing program be confined within or constrained by the Canada-U.S. international border. Therefore, transboundary effects must be considered to provide a complete and accurate environmental impact assessment of the proposed project. The draft Leasing EIS released in December 2018 does not do this. Doing so is also arguably a requirement pursuant to the 1987 international agreement between Canada and the United States.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
12.	Debbie	Miller	—	76288	3	Other Laws	2) The Agreement on the Conservation of Polar Bears is an international agreement signed by five nations in 1973: Canada, Denmark, Norway, Russia and the United States. Under this agreement countries are mandated to protect critical denning habitat for polar bear populations. Most of the coastal plain of the Arctic Refuge has been designated as "critical denning habitat" for the Southern Beaufort population of polar bears that are now threatened under the Endangered Species Act. There is an increasing trend for these pregnant polar bears to den on land and give birth to their cubs during winter because of the loss of stable sea ice due to climate change	The Agreement on the Conservation of Polar Bears and critical habitat designation do not preclude development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Ted	Heuer	—	97531	3	Other Laws	The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), the so called “organic act” for the National Wildlife Refuge System, amended the National Wildlife Refuge System Administration Act of 1966. The Improvement Act was passed to ensure that the refuge system is managed as a national system of lands and waters for the protection and conservation of our Nation’s wildlife for the benefit of present and future generations of Americans. It states that each refuge shall be managed to fulfill the mission of the System as well as the specific purposes for which the refuge was established. It also provides that wildlife-dependent recreation shall be the primary public uses on National Wildlife Refuges and shall receive priority consideration in refuge planning and management. Clearly, opening the coastal plain of the Arctic National Wildlife Refuge to oil and gas development will have adverse impacts to fish and wildlife habitats and wildlife-dependent recreation. There should be a discussion in the EIS that explains this.	Impacts to Arctic Refuge resources and uses are described throughout the EIS. The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Eric	Walsh	Government of Canada	74346	4	Other Laws	There is no explanation of how the conservation needs (generally) of our shared species covered by international agreements are best balanced with the leasing requirements of PL 115-97 by the action alternatives presented. Nor, in a more specific sense, is it apparent how the first two objectives ⁷ of the PCH Treaty are met by leasing more area than what the law requires. The dEIS does not explain how the multiple purposes ^{8,9} of the Arctic National Wildlife Refuge (ANWR) are best balanced by leasing more than the minimum area. Purpose (ii) under the Alaska National Interest Lands Conservation Act (ANILCA) is "to fulfill the international fish and wildlife treaty obligations of the United States". The analysis to reconcile the (now) competing purposes of the Refuge is needed in the context of our international agreements on Porcupine Caribou, Polar Bears and Migratory Birds.	Alternative D2 has been revised to offer 800,000 acres of land for lease. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	4	Other Laws	he DEIS's NSO provisions and setbacks conflict with Congress's mandate under the Tax Act. The broad, categorical NSO restrictions and extensive setbacks proposed by BLM are inconsistent with the Tax Act and the intent of Congress. Congress set the applicable limit on surface facility development at 2,000 acres, 43 a minimal footprint in the 1.5635-million-acre Coastal Plain area and the 19.3-million-acre Arctic Refuge. This reflects Congress's considered determination of the permissible footprint for the oil and gas program it mandated and the appropriate balance for protection of other resources. While surface protection and mitigation measures can be appropriately considered as the NEPA and permitting processes move forward to review specific development proposals, the NSO stipulations proposed at this initial stage comprise a priori prohibitions on surface use which Congress did not authorize. Sweeping limitations on development never considered by Congress upset the balance it intended and compromise the oil and gas program it established. In short, Congress has already spoken to surface development by limiting production and support facilities to 2,000 acres. Congress did not authorize BLM to further limit surface occupancy. Relevant provisions of the Tax Act demonstrate that Congress intended to establish an oil and gas program throughout the Coastal Plain, not one with additional limits on surface development. Thus, Congress directed that the prohibition in ANILCA section 1003 on development and 41 H.R. Rep. No. 115-466, at 675 (2017) (emphasis added). 42 The legislative history does not speak to other aspects of BLM's interpretation of the 2,000-acre limit, which BLM properly interprets to include only those portions of oil and gas facilities that actually touch the land's	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to Section 1.2. All action alternatives assume that 2,000 acres of production and support facilities would be constructed under the hypothetical development scenario, notwithstanding the inclusion of NSO areas.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	surface, and to exclude ice roads and reclaimed acreage formerly containing production and support facilities. 43 Pub. L. No. 115-97, § 20001(c)(3) ("Surface development. In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities"). Ms. Nicole Hayes March 13, 2019 Page 15 of 36 15 99959215.12 0078439-00052 production of oil and gas "shall not apply to the Coastal Plain."44 Instead, Congress made it a purpose of ANWR under section 303(b)(2) of ANILCA "to provide for an oil and gas program on the Coastal Plain."45 In the same section, Congress affirmatively mandated establishment of an oil and gas program "in and from the Coastal Plain."46 To carry out these provisions, Congress directed that the Secretary "shall issue any rights-of-way or easements across the Coastal Plain ... necessary to carry out this section."47 Congress required "area-wide" leasing sales and directed that the sales "shall offer... those areas that have the highest potential for the discovery of hydrocarbon."48 These provisions affirmatively direct the establishment of an "areawide" oil and gas program "across the Coastal Plain," including the as-yet-unknown "areas of the highest potential" for hydrocarbons.49 The DEIS's proposed NSO restrictions and extensive setbacks are inconsistent with the Tax Act's requirement that BLM establish an "area-wide" program that includes those areas that have the highest potential for the discovery of hydrocarbons.	(see above)

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16.	Christy	Stebbins	—	97980	4	Other Laws	The DEIS acknowledges the 1987 treaty between the U.S. and Canada regarding the conservation of the Porcupine Caribou Herd and its habitat (Vol. 1, 1-5; Vol. 2, D-1), but it does not say how the U.S. will mitigate the risk of irreversible damage or long-term adverse effects to the caribou or their habitat as a result of oil and gas leasing and development. Is that because the BLM does not believe irreversible damage or long-term adverse effects will result?	See Table 2-2 for mitigation measures analyzed in the EIS.
17.	David	MacMartin	Gwich'in Tribal Council	75581	5	Other Laws	The BLM Leasing EIS consideration of the potential transboundary effects of the proposed oil and gas leasing program will need to consider the likely effects of the project on the Porcupine Caribou Herd and the resulting interests of all of the parties to the PCMA.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
18.	Chandra	Turner	Inuvialuit Game Council	75904	5	Other Laws	We have read the section of the DEIS referencing caribou and especially the Porcupine Caribou Herd (PCH (at 3-103 - 3-122). This section of the DEIS begins by acknowledging that caribou are an important subsistence resource for Gwich'in and Inupiaq hunters but there is no acknowledgement of their importance for Inuvialuit, and the reference to Gwich'in appears to be to Alaskan Gwich'in Nations only. This section contains no references to the PCH Agreement although there are references to the herd wintering in Yukon (3-104) and occasionally calving in Yukon (3-106)	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Withheld	Withheld	World Wildlife Fund	81184	5	Other Laws	Furthermore, Section 7 of the ESA requires the BLM to consult with the FWS to ensure that its actions and the actions of any permit or license applicant are not likely to "jeopardize the continued existence" of polar bears, or "destroy or adversely modify" polar bears' designated critical habitat. 16 U.S.C. § 1536(a)(2). Despite this obligation to consult under Section 7, the BLM does not explain in the draft EIS when a Section 7 consultation will occur, or exactly which oil and gas activities will be subject to a Section 7 consultation process. Despite the potential for seismic exploration to have lethal impacts on threatened polar bears and the 100 percent probability for seismic exploration to "adversely modify" critical habitat for polar bears, the draft EIS further fails to adequately analyze meaningful and effective mitigation measures to avoid lethal impacts. Therefore, the BLM must issue a revised draft EIS to address these issues. The Feb. 5, 2019, announcement by Interior Department officials that seismic exploration will not be conducted this denning season provides BLM with additional time to revise the draft EIS to examine the full range of potential impacts from all phases of oil and gas activities, including pre-lease seismic and post-lease exploration. BLM needs to examine how the potential impacts of seismic exploration would combine with those of all other ensuing, reasonably foreseeable oil and gas related authorizations in the region-including leasing, exploration, development, production, and transportation-in a single EIS to understand and mitigate potential long-term consequences of seismic studies prior to lease sales. Specifically, BLM must evaluate how the method of den detection will impact polar bears when combined with the cumulative impacts of all the other reasonably	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including FWS-imposed terms and conditions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	foreseeable oil and gas activities on the Coastal Plain, given the additional stress these activities will place on the population. Finally, the three action alternatives BLM proposes in the draft EIS do not present a reasonable range sufficient to analyze differences in impacts to polar bears, since all of the action alternatives assume the entire Coastal Plan will be open to seismic exploration. The BLM must address all of these issues in a revised draft EIS	(see above)
20.	Curt	Leigh	—	69329	6	Other Laws	The countries that signed the International Porcupine Caribou Herd Agreement committed to conserving the herd and protecting its habitat to avoid irreversible damage or long term adverse effects (EIS p. D-2). The oil and gas development proposal as described in the EIS seems to conflict with the intent and objectives of that agreement.	The Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd (1987) does not preclude development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	David	MacMartin	Gwich'in Tribal Council	75581	6	Other Laws	Protecting and preserving Gwich'in traditional harvesting rights as guaranteed through Treaty 11 and through the subsequent modern treaty, the GCLCA, remains a priority for the Gwich'in people today. Oil and gas leasing and development in the ANWR Coastal Plain region of Alaska could seriously harm and endanger the ability of the Gwich'in, who account for 85 percent of the harvest of Porcupine Caribou, to effectively exercise their treaty harvesting rights. This in turn would undermine both the Gwich'in goal of rebuilding the Gwich'in nation based on Gwich'in traditions and traditional practices and the goal of building an enduring nation to nation relationship with Canada based on the foundation of our established treaty relationships. These are profoundly significant potential ultimate transboundary effects of proposed oil and gas leasing and subsequent development in the ANWR Alaskan Coastal Plains region. They must be researched and examined and addressed in the context of the BLM Leasing EIS.	All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
22.	DJ	Schubert	Animal Welfare Institute	75588	7	Other Laws	Leasing in low HCP areas gives preference to oil and gas development at the expense of other uses because the presence of leases can limit BLM's ability to manage for other resources, in violation of FLPMA's multiple use mandate. As a result, it is more consistent with both PL 115-97 and BLM's statutory obligations to provide that low potential lands are categorically determined to be unsuitable for leasing unless and until they can be shown to contain resources that have the potential to be developed.	FLPMA's multiple use mandate does not apply to the BLM's management of Coastal Plain oil and gas resources because PL 115-97 directs the BLM to manage for a specific use (i.e., oil and gas leasing and development). Under Alternatives D1 and D2, all or almost all, low HCP areas would not be available for lease to protect surface resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Pamela	Miller	—	94107	7	Other Laws	There is no mention of requirements of the National Paleontological Preservation Act of 2009 [10] and its requirements: SEC. 6302. MANAGEMENT. (a) In General-The Secretary shall manage and protect paleontological resources on Federal land using scientific principles and expertise. The Secretary shall develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. The DEIS provides no evidence of any inventories of paleontological resources conducted in the Arctic Refuge, nor has it compiled any baseline information specific to the Refuge Coastal Plain. While it states the "program area, and all the North Slope0/ Is widely regarded as fossiliferous" defined as "rich in fossils or fossil potential" (DEIS p. 3-41) citing BLM 2012, that NPRA Integrated Activity Plan does not contain any information about paleontological resources in the Arctic Refuge, nor does BLM 2018a listed as a source for Pleistocene fossils identified "across the North Slope// which include remains that existed at the same time as human habitation, including bears, muskoxen, caribou and moose" (DEIS p 3-42). Table 3-13, PFYC values of Program Area Geologic Bedrock Units does not associate with any maps, such as Map 3-8, but given that "most paleontological resources identified on the North Slope have been identified in areas west of the program area," (DEIS p 3-42), it seems unlikely that "noted fossil presence in unit" means that such types of fossils have actually been documented in the Arctic Refuge Coastal Plain and seems to means that such Geologic unit encompassing a greater area of the North Slope contains such types of fossils. Table 3-13 indicates that 1.4 million acres of the Refuge Coastal Plain are expected to have "flora and fauna"	ROP 29 objective is to "protect cultural and paleontological resources" and requires a cultural and paleontological resources survey before any ground-disturbing activities. Impacts to paleontological resources are expected to be minor; the EIS contains an appropriate level of analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	fossils present including caribou and other animals and these are relevant to our current understanding of the long relationship of the Gwich'in in the region. Map 3-8, Paleontological resources fails to show source of the information for the different ranked areas, and the classification does not make sense since lumped categories overlap, e.g. (2-3) with (3). Nor is there a map which portrays the various PFYC geologic unit descriptions listed in G.2 (DEIS p. G-6 to G-8). The DEIS fails to adequately describe the potential conflicts between potential sites of paleontological sites and also downplays impacts/ For example, "potential direct impacts on paleontological resources would be limited to future ground-disturbing activities, including drilling and gravel mining/" (DEIS p/ 343). Yet it fails to describe the extent of potential gravel mining that may take place.	(see above)
24.	Brook	Brisson	Trustees for Alaska	96981	7	Other Laws	It is unclear what process BLM is pursuing to hold a lease sale, and therefore, unclear if BLM is acting consistent with the Tax Act... BLM must clarify its approach to leasing with specificity. This is critically important so that the public understands the steps in this highly controversial project and is able to provide appropriate input at the right stage in order to inform the specific decision before BLM and ensure compliance with legal mandates.	In accordance with Section 20001(b)(3) of the Tax Act, leasing will be conducted in a manner similar to the administration of lease sales in NPR-A. A call for nominations and comment, and a detailed statement of sale, will be issued in the Federal Register prior to each lease sale.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Thomas	Carper	United States Senate	98267	7	Other Laws	BLM also fails to ensure that its leasing program complies with the protective mandates of the ESA and MMP A. Congress enacted the ESA to conserve endangered and threatened species and the habitats and ecosystems upon which they depend. Several species protected under the ESA inhabit the Arctic Refuge and its nearshore waters, including bowhead whales, ringed and bearded seals, spectacled eider, and polar bears. The DEIS fails to explain how BLM will comply with the ESA's substantive and procedural requirements to protect these species when conducting leasing operations.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including USFWS-imposed terms and conditions.
26.	Curt	Leigh	—	69329	8	Other Laws	Measures that will prevent or compensate for adverse impacts on both grizzly and polar bears are needed to satisfy the standards of the ESA and to meet our country's obligations to protect polar bears, den sites, and their habitats that is embodied in the International Agreement on the Conservation of Polar bears.	Grizzly bears in Alaska are not listed under the ESA. Various lease stipulations and ROPs would provide protections for both grizzly (brown) and polar bears. All permitted oil and gas activities must comply with the ESA and MMPA, including USFWS-imposed terms and conditions. ROPs 4, 10, 36, 40, and 46 all have specific requirements for polar bears.

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27.	Thomas	Carper	—	83303	8	Other Laws	BLM also fails to ensure that its leasing program complies with the protective mandates of the ESA and MMPA. Congress enacted the ESA to conserve endangered and threatened species and the habitats and ecosystems upon which they depend. Several species protected under the ESA inhabit the Arctic Refuge and its nearshore waters, including bowhead whales, ringed and bearded seals, spectacled eider, and polar bears. The DEIS fails to explain how BLM will comply with the ESA's substantive and procedural requirements to protect these species when conducting leasing operations. The DEIS contemplates extensive oil and gas leasing on no less than one million acres of the Coastal Plain and fails to consider effective mitigation measures to address any damage this activity may cause. This failure is concerning given BLM's Congressional mandate to avoid jeopardizing endangered and threatened species and destroying or adversely modifying their critical habitats. Additionally, the DEIS does not adequately explain how an oil and gas program on the Coastal Plain will comply with the MMPA. To carry out Congress' protective and conservation purposes, the MMPA prohibits the taking of all marine mammals, with limited exceptions. BLM's DEIS, however, fails to consider any MMPA implications for any marine mammal species other than polar bears - ignoring the protected status of whales and seals entirely. Further, the DEIS ignores likely lethal and population-level impacts from exploration and development to the already depleted Southern Beaufort Stock of polar bears and fails to consider effective and enforceable mitigation measures. In sum, BLM's proposed actions ignore and are in direct conflict with existing federal requirements to ensure its leasing program will protect species under the ESA and MMPA.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including USFWS and NMFS-imposed terms and conditions.

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28.	Kenyon	Meyer	—	94105	8	Other Laws	The mandatory sale of lands in the project area appears to stand in bold contrast to the goals of the Alaska National Interest Lands Conservation Act ("ANILCA"), implemented for the purpose of creating and sustaining national parklands throughout Alaska to preserve wildlife, wilderness, and recreational values. ²⁷ Among other things, ANILCA established the following purposes for the Refuge: (1) to conserve fish and wildlife populations and habitats in their natural diversity; and (2) to fulfill the international treaty obligations of the United States with respect to fish, wildlife, and their habitats. ²⁸ Section 1003 of ANILCA prohibits production of oil and gas in the Refuge, and no leasing or other development leading to production of oil and gas may take place unless authorized by a further Act of Congress. ²⁹ The Tax Act may be such an Act, but, there is no indication in the Tax Act that it seeks to override the fundamental goals of other competing legal obligations, including ANILCA, the Endangered Species Act, NEPA, or international treaties and commitments. It is not presently clear how these can be reconciled with the Tax Act's mandate to open the Coastal Plain lands to leasing.	The Tax Act amends ANILCA to provide for an oil and gas program in the Coastal Plain of the Arctic National Wildlife Refuge. All action alternatives are designed to meet the purpose and need, to account for all purposes of the Arctic National Wildlife Refuge, and to comply with all applicable laws and treaties.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Thomas	Carper	United States Senate	98267	9	Other Laws	Additionally, the DEIS does not adequately explain how an oil and gas program on the Coastal Plain will comply with the MMP A. To carry out Congress' protective and conservation purposes, the MMP A prohibits the taking of all marine mammals, with limited exceptions. BLM's DEIS, however, fails to consider any MMPA implications for any marine mammal species other than polar bears - ignoring the protected status of whales and seals entirely. Further, the DEIS ignores likely lethal and population-level impacts from exploration and development to the already depleted Southern Beaufort Stock of polar bears and fails to consider effective and enforceable mitigation measures. In sum, BLM's proposed actions ignore and are in direct conflict with existing federal requirements to ensure its leasing program will protect species under the ESA and MMPA.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including USFWS and NMFS-imposed terms and conditions.
30.	Joan	Norberg	Yukon Conservation Society	57318	10	Other Laws	International Porcupine Caribou Herd Agreement that calls upon the parties to consult with each other should any activity be contemplated that might affect the PCH.2 2 http://extwprlegs1.fao.org/docs/pdf/bi-145059.pdf Chapter 3, Section D YCS is very concerned that the International Porcupine Caribou Herd Agreement is given minimal regard in the current process. It is the view of YCS that the activity proposed is of sufficient significance that government-to-government consultation is required prior to issuing any authorization.	The parties to the agreement are consulting on this EIS through the IPCB, which was reactivated after passage of the Tax Act.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Eric	Walsh	Government of Canada	74346	10	Other Laws	a thorough consideration of transboundary effects in the dEIS would be inferred by the several clauses of our formal bilateral agreements to co-manage important species shared across our borders, particularly the PCH Treaty), the Convention for the Protection of Migratory Birds in the United States and Canada and the Agreement on the Conservation of Polar Bears. For example, the dEIS (p. 3-160) points out the need to assess impacts to Canadian subsistence users under section 3(g) of the PCH treaty. In addition to that clause, the first two sections of the preamble ¹⁵ and clause 2(b)(2) ¹⁶ directly speak to the international nature of the herd, that subsistence users include Canadians, and that ensuring continued customary and traditional use extends to subsistence users in both countries. There is no indication that users in one country should be considered differently in an EIS.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
32.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	10	Other Laws	The DEIS also fails to take a hard look at impacts to cultural resources, historic properties, and subsistence because the BLM has failed to conduct its required Section 106 review in a manner consistent with both the NHPA and the ACHP's regulations. Therefore, it has failed to integrate the information, analyses, and findings from the Section 106 process into the NEPA process and the DEIS.	Section 106 of NHPA compliance has occurred concurrently with consultation and development of this EIS through development of a programmatic agreement. The EIS incorporates information acquired as a result of the Section 106 process.

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33.	Brook	Brisson	Trustees for Alaska	96981	10	Other Laws	BLM's regulations similarly indicate that BLM should take any actions deemed "necessary to mitigate or avoid unnecessary surface damage and to minimize ecological disturbance" and that BLM is obligated to provide maximum protection measures for all areas identified as having significant subsistence, recreational, fish and wildlife, or historical or scenic values.⁴⁹ These actions may include limiting, restricting, or prohibiting the use of and access to lands, or actions to "protect fish and wildlife breeding, nesting, spawning, lambing or calving activity, major migrations of fish and wildlife, and other environmental, scenic, or historic values."⁵⁰ The regulations also set out a process for BLM to identify special areas with significant surface values.⁵¹ Under these provisions, BLM has a broad obligation to protect the surface values. BLM must ensure that it is providing similar protections as part of the oil and gas program in the Arctic Refuge in order to comply with the Tax Act's mandate that the oil and gas program be conducted in a manner similar to the leasing program in the Reserve. BLM has failed to comply with its statutory obligations to identify special areas and provide maximum protection for those values in the Arctic Refuge. At no point in BLM's analysis has BLM made any attempt to identify and designate special areas with significant subsistence, recreational, fish and wildlife, or historical or scenic values, despite the fact that those provisions are very closely related to BLM's leasing provisions, including stipulations. BLM should identify those areas with specificity and ensure that it provides maximum protection for those significant values of the Coastal Plain, consistent with its statutory obligations. Any measures to protect those areas must account for the exceptional surface biological values and resources of the	Surface management prescriptions for the Refuge are established under the USFWS CCP (2015), which will be revised to make it consistent with the Tax Act.

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33. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Coastal Plain, ensure maximum protection of those values, and be based on updated information and scientific data. [43 C.F.R. § 2361.1(a), (c). 2361.1(e)(1). 2361.1(c).]	(see above)
34.	Karimah	Schoenhut	Sierra Club	97751	10	Other Laws	in selecting among these harmful action alternatives prior to engaging in any analysis to ensure those alternatives will not preclude or limit options for fulfilling its ESA section 7(a)(l) obligations to use its authorities to recover the species, BLM also would violate the ESA by flouting its substantive duty under section 7(a)(l).	Consultation under Section 7 of the ESA has occurred concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.
35.	Withheld	Withheld	World Wildlife Fund	81184	11	Other Laws	The rights of indigenous people to harvest caribou are protected by the 1987 International Porcupine Caribou Agreement between the U.S. and Canada. This agreement states that "[t]he Parties will ensure that the Porcupine Caribou Herd, its habitat and the interests of users of Porcupine Caribou are given effective consideration in evaluating proposed activities within the range of the herd." The BLM must revise the draft EIS, including the mitigation measures, to demonstrate how its oil and gas program will protect the subsistence harvest and comply with this international Agreement both in the U.S. and in Canada.	The leasing program will not restrict the ability of subsistence users to continue subsistence practices. Multiple lease stipulations and ROPs provide protections for caribou and subsistence activities.

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36.	Withheld	Withheld	—	72125	14	Other Laws	Important agreements and laws that limit the responsible official decision space are summarized below. The BLM should discuss their relevance to the planning and management of the Arctic Refuge in future land use planning and NEPA documents. * The mission of the National Wildlife Refuge System Administration Act, as amended through the National Wildlife Refuge Improvement Act, is “to administer a network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States...” * The Fish and Wildlife Service administers and manages the Arctic Refuge, as defined under Section 303(2) of ANILCA, which establishes the Arctic National Wildlife Refuge and additions as part of the National Wildlife Refuge System. * ANILCA SEC. 304. Describes that (a) each refuge shall be administered by the Secretary...in accordance with the laws governing the administration of units of the National Wildlife Refuge System, and this Act. (b) In applying section 4(d) of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd) with respect to each refuge, the Secretary may not permit any use, or grant easements for any purpose described in such section 4(d) unless such use or purpose is compatible with the purposes of the refuge. * Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) establishes procedures for federal land management agencies to evaluate the effect of federal actions on subsistence uses and needs. * The Endangered Species Act (ESA) states that all federal agencies shall...ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species. Furthermore, an agency's action shall not destroy or	The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. Applicable laws and agreements are addressed in Appendix D. Agency roles and responsibilities are outlined in Chapter 1.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	adversely modify the habitat of such species that the Secretary determines to be critical. * All marine mammals are protected under the Marine Mammal Protection Act of 1972 (16 USC 1361 et seq.). * Agreement on the Conservation of polar bears (Range States Agreement) describes that special attention is given to denning areas, feeding sites, and migration corridors, based on best available science through coordinated research. * The International Porcupine Caribou Herd Agreement describes that the herd should be conserved according to ecological principles that emphasize the importance of conserving habitat, including calving, post-calving, migrating, wintering, and seeking insect relief habitat. * The Wild and Scenic Rivers Act requires protecting eligible Wild and Scenic Rivers.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Withheld	Withheld	Government of the Northwest Territories	92862	14	Other Laws	The IPCA states, under the section on International Responsibility, "The parties will consult promptly to consider appropriate action in the event of: 1. Significant damage to the Porcupine Caribou Herd or its habitat for which there is responsibility, if any, under international law; or 2. Significant disruption of migration or other important behavior patterns of the Porcupine Caribou Herd that would significantly lessen the ability of users of Porcupine Caribou to use the Herd. The GNWT's key concerns on this topic are: · There were no consultations with potentially affected communities in Canada. The IPCA states, under the section on International Responsibility, "The parties will consult promptly to consider appropriate action in the event of: 1. Significant damage to the Porcupine Caribou Herd or its habitat for which there is responsibility, if any, under international law; or 2. Significant disruption of migration or other important behavior patterns of the Porcupine Caribou Herd that would significantly lessen the ability of users of Porcupine Caribou to use the Herd." · The PCMB Harvest Management Plan 2010 and the process to protect the herd from the impacts of overharvest during periods of decline was not considered. · How a reduction in the health of the PCH will impact the health and well-being of the Indigenous peoples of the Northwest Territories who rely on the PCH as a principle source of nutrition, and the harvesting of which is a key component of local socio-cultural systems.	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Withheld	Withheld	Government of the Northwest Territories	92862	15	Other Laws	The GNWT recommends the BLM clarify how the conclusions in the draft EIS meet the following clauses of the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd: 2 (a) To conserve the Porcupine Caribou Herd and its habitat through international co-operation and co-ordination so that the risk of irreversible damage or long-term adverse effects as a result of use of caribou or their habitat is minimized. 2 (b) To ensure opportunities for customary and traditional uses of the Porcupine Caribou Herd by signatories of the Agreement. 2 (c) To enable users of Porcupine Caribou to participate in the international coordination of the conservation of the Porcupine Caribou Herd and its habitat. 2 (d) To encourage co-operation and communication among governments, users of Porcupine Caribou and others to achieve these objectives. 3 (b) The Parties will ensure that the Porcupine Caribou Herd, its habitat and the interests of users of Porcupine Caribou are given effective consideration in evaluating proposed activities within the range of the Herd. 3 (e) Activities requiring a Party's approval having a potential significant impact on the conservation or use of the Porcupine Caribou Herd or its habitat may require mitigation. 3 (f). The Parties should avoid or minimize activities that would significantly disrupt migration or other important behavior patterns of the Porcupine Caribou Herd or that would otherwise lessen the ability of users of Porcupine Caribou to use the Herd. 3 (g).When evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, including cumulative impacts, to the Porcupine Caribou Herd, its habitat and affected users of Porcupine Caribou.	The parties to the agreement are consulting on this EIS through the IPCB.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Withheld	Withheld	WWF-Canada	85059	17	Other Laws	Moreover, disturbances of maternal dens that result in potentially lethal outcomes for adult females and cubs may have population-level impacts on the already stressed Southern Beaufort Sea subpopulation. Such an outcome would be in direct conflict with mandated actions in the U.S. Fish and Wildlife Service (FWS) Polar Bear Conservation Management Plan, which states that protecting maternal denning habitat is critical to recovering the Southern Beaufort Sea subpopulation. Such an outcome would also be in direct conflict with the Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea, which prohibits disturbance of dens and hunting of family groups, and with the ESA, which requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary. Section 9 of the ESA makes it unlawful for any person-including private and public entities hired to conduct seismic surveys-to "take" individuals of an endangered species and, by regulation, a threatened species. BLM cannot engage-or permit others to engage-in activities that will result in unauthorized incidental take of listed species. Throughout its analysis, BLM improperly relies on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears. The agency fails to state that such ITRs would be required for this leasing program, nor does the draft EIS explain BLM's assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including FWS and NMFS-imposed terms and conditions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	19	Other Laws	this analysis does not comply with international treaty obligations, which requires consultation and input from the Porcupine Caribou Board to consider the interests of both Alaskan and Canadian Porcupine Caribou subsistence users. ³¹	DOI has conducted consultation with the IPCB on the development of the EIS.
41.	Brook	Brisson	Trustees for Alaska	98270	21	Other Laws	Furthermore, the BLM fails to be transparent about its consultation with the Porcupine Caribou Management Board, as required by international treaty. The Porcupine Caribou Management Board consists of members who use the herd from Alaska, the Yukon Territory, and Northwest Territories. The Canadian Gwich'in, in northern Yukon and Northwest Territories, rely heavily on the Porcupine Caribou Herd, and have previously accounted for up to 85 percent of the harvest. ¹⁶³⁰ Incorporating information and suggestions obtained through consultation is essential to inform BLM's subsistence analysis of caribou, and not doing so results in significant risk to the subsistence users. ¹⁶³¹ By failing to be transparent about the consultation process, BLM falls short of international treaty obligations, and does not explain how concerns of the people, science, and traditional knowledge from indigenous residents of the Yukon Territory and Northwest Territories were incorporated. As a result, BLM fails meaningfully to consider the input of affected communities in Canada, who represent over half of the Herd's use will experience impacts related to their subsistence use.	The parties to the agreement are consulting on this action through the IPCB. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Brook	Brisson	Trustees for Alaska	96981	23	Other Laws	The Tax Act also states that the "Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section."77 BLM fails to explain how it will address and apply the rights-of-way provision in the Tax Act, particularly in light of other mandatory statutory obligations for rights-of-way under ANILCA Title XI. The Tax Act did not waive any substantive requirements of these laws; any right-of-way or easement applications must first comply with these statutory mandates, including ANILCA Title XI. BLM must clarify and recognize this in the final EIS.	In processing applications for ROWs, the BLM will comply with all applicable laws, including ANILCA.
43.	Chandra	Turner	Inuvialuit Game Council	75904	24	Other Laws	It is our assessment that the DEIS fails to fulfill the United States' EIS obligations under both US domestic law and under international law and fails to recognize the transboundary nature of the Arctic Coastal Plain. Accordingly, we respectfully request that measures be taken to rectify the deficiencies identified and that no further steps be taken with respect to operationalizing the leasing program unless and until a supplementary EIS can be prepared and published for further comment.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	Brook	Brisson	Trustees for Alaska	96981	26	Other Laws	In particular, it has failed to engage in rulemaking to establish what substantive standards apply to its decisions about leases and the authorization of development related activities. The agency has also failed to point to any existing BLM regulations that actually apply to the Coastal Plain to explain what standards apply to its decisions. Although the Tax Act directs BLM to "manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501, et seq.) (including regulations),"87 it does not state that either the NPRPA or the regulations thereunder are directly applicable to the Coastal Plain, and, on their face, the NPRPA and the regulations apply only to the geographic area of the NPRA.88 The DEIS fails to acknowledge that BLM is engaged in what is really a rulemaking endeavor to establish the standards and procedures for leasing in the Coastal Plain. Instead, BLM appears to be tacitly making those decisions without following the procedures required by the Administrative Procedure Act (APA) or followed for the NPRA.	The Tax Act directs the BLM to implement the oil and gas program, in a manner similar to the NPRPA and its implementing regulations. The Tax Act does not direct the BLM to promulgate regulations for the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Brook	Brisson	Trustees for Alaska	96981	27	Other Laws	This failure undermines the public participation in the current process required by NEPA because the public is unable to evaluate, for example, whether the proposed lease stipulations satisfy the applicable protective standards. It is impossible to do so because BLM has failed to articulate to the public what those standards are and what regulatory scheme or schemes are the proper ones. As discussed above, the direction in the Tax Act constrains BLM to provide, among other protections, the resource protections identified in the NPRPA and the regulations thereunder, but BLM has failed to articulate how it will provide even those protective standards; nor has it articulated how it will adjust those standards to provide the greater level of protection necessary for any oil and gas program to be consistent with the requirements of ANILCA and the National Wildlife Refuge System Administration Act to continue to fulfill the primary purposes of the Refuge.	All alternatives are designed to comply with the purposes of the refuge, as amended by the Tax Act, as well as the Tax Act. Many of the lease stipulations and ROPs are modeled after those in the NPR-A Integrated Activity Plan.
46.	Brook	Brisson	Trustees for Alaska	98269	27	Other Laws	Despite the clear compatibility requirements, BLM fails to acknowledge them, let alone discuss them in the EIS. In fact, entirely absent from BLM's discussion of the NWRSA in Appendix D is any mention of the compatibility requirement or how BLM is working with FWS to ensure that the proposed oil and gas program is compatible. For instance, the FWS compatibility policy states uses, such as roads and pipelines that may reasonably be anticipated "to reduce the quality or quantity or fragment habitat on a national wildlife refuge will not be compatible."337 Yet, the DEIS does not address how the impacts of the leasing program will comply with this clear statement of activities that are not compatible with the refuge system mission.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. The USFWS CCP (2015) will be revised to be consistent with the Tax Act.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Brook	Brisson	Trustees for Alaska	96981	28	Other Laws	In addition to violating NEPA's requirements, this failure potentially also violates the requirements of the APA and FLPMA to the extent they may apply. The DEIS makes no attempt at explaining whether or not FLPMA applies to its management of the interests in land addressed by the Tax Act. It does not list FLPMA as one of the laws that applies to its decision. An explanation is necessary because FLPMA is generally applicable to the NPR-A, but is not applicable to National Wildlife Refuges. ...However, any application of FLPMA must also take into account the more protective substantive laws that apply to the Arctic Refuge and FWS's administration and management of the lands to achieve Refuge and Refuge System purposes.	Surface management of the Refuge is governed by the Refuge Administration Act, not FLPMA. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to Section 1.2.
48.	Brook	Brisson	Trustees for Alaska	98269	30	Other Laws	Section 7's procedural and substantive duties cannot be separated. Courts require stringent procedural compliance to ensure substantive compliance. ³⁸⁸ This also promotes other vital statutory objectives. First, Section 7(a)(2) is the ESA's only mechanism to ensure against the destruction or adverse modification of critical habitat. ³⁸⁹ Second, unlike Section 9, which authorizes penalties only after unlawful take has happened, Section 7 is designed to prevent and mitigate harm to protected species and critical habitat. The consultation process "ensures that environmental concerns will be properly factored into the decision-making process as intended by Congress." ³⁹⁰ Section 7 thus embodies the "institutionalization of . . . caution" that Congress intended in enacting the ESA. ³⁹¹ Here, however, the draft EIS fails to acknowledge these important mandates or explain how BLM will comply with the ESA's substantive and procedural requirements when conducting leasing.... The draft EIS also fails to adequately describe how BLM will comply with Section 7's procedural requirements. The EIS merely states that	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	"BLM consults with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) regarding the effects of its actions on threatened and endangered species and designated critical habitat."392 It is unclear when Section 7 consultation will occur and what level of activities BLM intends to consult on for purposes of this EIS with either FWS (for polar bears and spectacled eider) or NMFS (for whales and seals). As an initial matter, the draft EIS does not contain a preferred alternative, which is typically the alternative used for purpose of Section 7 consultation. Though BLM itself recognizes that there is little to no difference in impacts to polar bears among its action alternatives,393 the agency should clarify which of these action alternatives are being defined as the "agency action" for purposes of consultation with FWS and NMFS. BLM should also confirm that FWS and NMFS will issue biological opinions prior to any Record of Decision being issued to authorize a lease sale on the Coastal Plain.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49.	Brook	Brisson	Trustees for Alaska	98269	31	Other Laws	Additionally, the EIS does not expressly state which ESA-listed species BLM intends to consult with NMFS and FWS on. For instance, BLM acknowledges that spectacled eiders are protected under the ESA and may be present in the program area in low numbers, ³⁹⁴ but these ESA-protected birds are never again mentioned in the impacts analysis. BLM is obligated to satisfy its consultation obligations on any action that may affect any listed species or its critical habitat. ³⁹⁵ The threshold for triggering formal consultation is very low, and “the burden is on the Federal agency” to show that the action is not likely to affect adversely species or critical habitat and “[a]ny possible effect” triggers formal consultation requirements. ³⁹⁶ Only if and when BLM obtains a written NLAA determination from a Service that the leasing program may affect, but is not likely to adversely affect, a particular listed species may BLM forego formal consultation on the effects of its action on such species. Otherwise, BLM must formally consult on all species that may be adversely affected by the agency's authorization of an oil and gas leasing program.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.
50.	Brook	Brisson	Trustees for Alaska	98269	32	Other Laws	BLM also recognizes that several species of marine mammals present in or adjacent to the program area are protected under the ESA: polar bear, bowhead whales, and bearded and ringed seals. ³⁹⁷ BLM does not, however, acknowledge its obligations to consult under the ESA for these species, and instead repeatedly points to the MMPA as the sole source for mitigation measures and procedural protections for these ESA-listed species. BLM must engage in formal consultation for all these species and BLM must explain what activities will be considered as part of that consultation process.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Brook	Brisson	Trustees for Alaska	98269	33	Other Laws	BLM's analysis assumes that issuance of oil and gas leases will have no direct impact on the environment, but BLM states it will consider "direct and indirect impacts" of leasing in this EIS.398 These vague and confusing statements repeated throughout the document make it impossible to predict what oil and gas activities will be subject to Section 7 consultation prior to BLM conducting lease sales or issuing leases. The ESA makes it clear that BLM is obligated to consult on all reasonably foreseeable future effects from its leasing program on listed species. ... To comply with its Section 7 consultation requirements, BLM must consult not only on the leasing program, but on the impacts of exploration, production and development to federally protected species.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Brook	Brisson	Trustees for Alaska	98269	34	Other Laws	the ESA requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species-i.e., by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary. 402 BLM cannot lawfully authorize an oil and gas leasing program in the Arctic Refuge that is likely to jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. Nor can it engage-or permit others to engage-in activities that will result in unauthorized incidental take of listed species. These requirements are put into practice through the Section 7 consultation process. The draft EIS fails to explain how BLM will comply with these important substantive and procedural legal requirements, in violation of NEPA's implementing regulations. 403 At this time, it does not appear that BLM has completed formal consultations under the ESA. Before the agency can make its final decision as memorialized in the Record of Decision, it must complete consultations under Section 7 and obtain biological opinions (or written NLAA concurrences) from NMFS and FWS. It must also fully explain in the Final EIS how it has ensured that its considered alternatives and its ultimate choice of alternatives, as reflected in the ROD, will or will not achieve the requirements of the ESA.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Brook	Brisson	Trustees for Alaska	98269	36	Other Laws	In describing the MMPA in Appendix D, BLM mischaracterizes the statutory program itself. The EIS states that "USFWS may issue a letter of authorization for incidental take, for up to 1 year, of small numbers of marine mammals, where the take would be limited to harassment (Incidental Harassment Authorization)." ⁴¹⁵ This statement is incorrect. As described above, letters of authorization are issued pursuant to ITRs, which are not limited to harassment but may authorize injurious or lethal take. On the other hand, IHAs are individual one-year harassment-only authorizations. Furthermore, nowhere in Appendix D's description of MMPA requirements does BLM mention the process or requirements for ITRs. However, BLM assumes, without explanation, that ITRs will be necessary to authorize take of threatened polar bears. ⁴¹⁶ BLM must not conflate these two very different and very important authorizations in its EIS.	Text has been revised accordingly in Appendix D.
54.	Brook	Brisson	Trustees for Alaska	98269	37	Other Laws	Even more troubling is the confusion contained in the BLM's discussion of MMPA requirements in chapter 3. First, BLM seems to assume that polar bears-but no other marine mammal -are subject to MMPA protections. There is absolutely no mention of ITRs or IHAs in its analysis for whales, bearded seals, or ringed seals. This oversight is particularly troubling given that the EIS expressly recognizes that on-ice seismic activity "could be lethal to a small number of seals." ⁴¹⁷ Such lethal take may only be authorized under the MMPA via issuance of ITR by NMFS. BLM fails to describe this requirement in either Appendix D or Chapter 3. Thus, BLM failed address how take of all marine mammals under its proposed oil and gas leasing program will comply with the MMPA.	Where oil and gas activities may impact these other marine mammals, operators are required to comply with MMPA and may seek a IHA or ITR.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Brook	Brisson	Trustees for Alaska	98269	38	Other Laws	FWS has issued incidental take regulations for the taking of polar bears by oil and gas activities in the Beaufort Sea and along the coast, but these regulations expressly exclude and do not take into consideration potential oil and gas activities in the Arctic Refuge. ⁴¹⁸ BLM repeatedly relies on the idea that ITRs will prevent harm to polar bears from leasing impacts, in some cases relying upon ITRs as the sole source of mitigation of impacts to polar bears. ⁴¹⁹ However, BLM does not expressly state whether the agency believes an ITR will be required for oil and gas leasing on the Coastal Plain. ...These characterizations of the ITR process and the protections it provides to polar bears are improper and misleading to the public. BLM must clarify whether it believes ITRs or IHAs will be required for leasing activities. Without clearly articulating when and for what activities ITRs will be issued, BLM cannot assume future mitigation measures will be put in place via these ITRs or fully comply with its NEPA obligation to "state how alternatives considered in it and decisions based on it will or will not achieve the requirements [of] other environmental laws and policies." ⁴²¹	BLM anticipates ITRs will be developed for Coastal Plain activities, and that they will provide protections similar to those found in the Beaufort Sea ITR. All operators are required to comply with MMPA.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Brook	Brisson	Trustees for Alaska	98269	39	Other Laws	Moreover, BLM relies on future ITR protections for polar bears without articulating what specific measures would be necessary or effective or explaining at what stage of oil and gas activities it assumes which ITR protections would be required. Similar to our concerns described in the ESA section above, BLM assumes for purposes of this EIS that leasing itself presents no direct impacts on the environment. Thus it is not clear at what stage-pre-leasing seismic testing, post-lease exploration, development, and/or production-that the potential protections from IHAs or ITRs (that are not yet developed) would come into play. BLM further seems to assume that any mitigation required by ITRs would preclude negative impacts to polar bears, which is unrealistic and contrary to recent studies and research. ⁴²² The EIS must plainly state what specific mitigation measures it believes will be in place at which phase of oil and gas activities to protect marine mammals.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision. All permitted oil and gas activities must comply with the ESA and MMPA, including USFWS and NMFS-imposed terms and conditions.
57.	Brook	Brisson	Trustees for Alaska	98269	40	Other Laws	The MBTA makes it unlawful "at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess . . . any migratory bird" unless otherwise permitted by regulation. ⁴²⁷ Any oil and gas activities that take or kill migratory birds on the Coastal Plain without authorization would violate the MBTA. ⁴²⁸ BLM must address how it will ensure compliance with the MBTA for an oil and gas program on the Coastal Plain, in particular with regards to the identification of the tracts to offer for lease. BLM has, to date, failed to ensure compliance with this statute.	BLM requires operators to comply with all applicable federal, state and local laws. MBTA compliance requirements would not vary by lease tract.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Brook	Brisson	Trustees for Alaska	98271	41	Other Laws	There is no indication that the DEIS includes the required EFH Assessment, or that NMFS has had the ability to weigh in during the comment period, given the government shutdown. The DEIS section on EFH merely identifies that EFH of salmon and cod exist in the program area and cites to BLM's 2012 EIS for the Integrated Activity Plan for the National Petroleum Reserve Alaska (NPRA). This is problematic in at least two respects. First, the 2012 NPRA EIS was completed prior to the most recent NMFS 5-year review of the Arctic Management Area. Thus, BLM is relying on an outdated EFH Assessment that is not based on the best and most recent available data. Second, while the NPRA EIS did analyze the impacts to salmon and cod EFH, that assessment covered a different geographic area and addressed different EFH locations. It thus cannot satisfy the consultation requirement for the Coastal Plain oil and gas leasing EIS. BLM must prepare an EFH Assessment and consult with NFMS.	An EFH Assessment is included in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	Eric	Walsh	Government of Canada	74346	44	Other Laws	Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd The dEIS made no explicit reference to many specific requirements of the PCH Treaty. Canada requests that the U.S. indicate how the dEIS has met each of the following clauses of the PCH Treaty: 2 (a) To conserve the Porcupine Caribou Herd and its habitat through international co-operation and co-ordination so that the risk of irreversible damage or long-term adverse effects as a result of use of caribou or their habitat is minimized 2 (b) To ensure opportunities for customary and traditional uses of the Porcupine Caribou Herd by signatories of the PCMA. 2 (c) To enable users of Porcupine Caribou to participate in the international coordination of the conservation of the Porcupine Caribou Herd and its habitat 2 (d) To encourage co-operation and communication among governments, users of Porcupine Caribou and others to achieve these objectives 3 (b) The Parties will ensure that the Porcupine Caribou Herd, its habitat and the interests of users of Porcupine Caribou are given effective consideration in evaluating proposed activities within the range of the Herd 3 (e) Activities requiring a Party's approval having a potential significant impact on the conservation or use of the Porcupine Caribou Herd or its habitat may require mitigation. 3 (f). The Parties should avoid or minimize activities that would significantly disrupt migration or other important behavior patterns of the Porcupine Caribou Herd or that would otherwise lessen the ability of users of Porcupine Caribou to use the Herd 3 (g). When evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, including cumulative	All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. Multiple lease stipulations and ROPs provide protections for caribou and subsistence activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	impacts, to the Porcupine Caribou Herd, its habitat and affected users of Porcupine Caribou.	(see above)
60.	Brook	Brisson	Trustees for Alaska	98269	47	Other Laws	The DEIS also ignores the concerns and information provided by the Porcupine Caribou Management Board (PCMB), which was established in 1985 as an advisory board appointed by the national, territorial, and indigenous Canadian governments representing traditional users of the Porcupine Caribou Herd within the Yukon and Northwest Territories. ...The PCMB comments included maps showing PCH calving areas in both Alaska and Canada, along with parks and other protected areas in both countries. In contrast, the DEIS map of PCH calving areas cuts off at the international boundary, 438 and none of the DEIS maps show parks and protected areas in both Alaska and Canada. BLM violates the mandate of the International Treaty for the United States and Canada to manage the PCH in a sustainable way. BLM's failure to account for the PCH's entire range during development of the DEIS is inconsistent with this mandate.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
61.	Brook	Brisson	Trustees for Alaska	98269	49	Other Laws	In the BLM's rush to meet its unrealistic timeline to lease the Coastal Plain, the BLM has failed to provide the Board with a reasonable opportunity to make recommendations to protect the Herd from the harmful effects of oil and gas development. The U.S. government only recently filled its vacancies on the Board and the Board has just held one meeting so far, in Kaktovik in August 2018. Yet, the BLM has moved ahead with the DEIS without giving the Board an opportunity to make recommendations that could avoid or significantly mitigate transboundary effects on the Herd and users of the Herd. Once the Board makes its recommendations, the BLM will need to revise the DEIS to evaluate a new alternative based on the Board's recommendations.	The EIS gives due consideration to the IPCA and ANILCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Brook	Brisson	Trustees for Alaska	98269	52	Other Laws	In assessing the effects of an oil and gas program on the Coastal Plain, BLM is required to consider the transboundary impacts on polar bears in the context of our international obligations under the 1973 Agreement on the Conservation of Polar Bears and the 1988 Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea.444 BLM has failed to do so.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
63.	Brook	Brisson	Trustees for Alaska	98269	53	Other Laws	BLM has failed to consider how an oil and gas program in the Coastal Plain and its impacts on SBS polar bears will affect the quotas and management protocols established through the I-I Agreement.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
64.	Brook	Brisson	Trustees for Alaska	98269	54	Other Laws	The EIS fails to analyze how the proposed oil and gas leasing program will affect polar bears and subsistence users in Canada. Additionally, the EIS fails to address how BLM will ensure adequate coordination with Canada to protect polar bears that will be affected by oil and gas leasing in the Arctic Refuge Coastal Plain.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Withheld	Withheld	—	72125	58	Other Laws	The National Refuge System Legislative History reveals that a major problem which the Refuge Act sought to solve was joint jurisdiction over the refuges. In explaining 668dd(a)(1) of the Wildlife Refuge Administration Act, the legislative history affirms that the Fish and Wildlife Service is the designated agency through which the refuges must be administered, "thereby eliminating the possibility of the Secretary delegating his authority to ... any other Interior agency." Further, "there will be no joint administration of any units within the System by the U.S. Fish and Wildlife Service and any other agency." The Secretary may not permit any use, or grant easements for any purpose described in such section 4(d) of the National Wildlife Refuge System Administration Act of 1966 unless such use or purpose is compatible with the purposes of the refuge (16 U.S.C. 668dd, 603 FW 2).	Roles and responsibilities are described in Chapter 1. The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities. The Tax Act amends the purposes of the Refuge to provide for an oil and gas program.
66.	Brook	Brisson	Trustees for Alaska	98270	82	Other Laws	All identified archaeological resources must be protected consistent with Archaeological Resources Protection Act (ARPA) to ensure there is no "[u]nauthorized excavation, removal, damage, alteration, or defacement of archaeological resources."1728 The DEIS currently makes no reference to the ARPA and how BLM will comply with its mandates - this is an unacceptable omission and must be remedied.	Text has been revised accordingly in Appendix D.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	—	—	Alaska Department of Natural Resources	94102	91	Other Laws	The State of Alaska has substantial concerns about sections in the Draft EIS that conflict with provisions in ANILCA and mischaracterize elements of the Wild and Scenic Rivers Act and 1964 Wilderness Act. The result is a disjointed analysis that in some instances correctly identifies how the Tax Act supersedes prior administrative actions, such as the wilderness recommendations for the Coastal Plain put forward in the 2015 Revised Arctic National Wildlife Refuge Comprehensive Conservation Plan (2015 Arctic Refuge CCP), and in others incorrectly proposes overly restrictive measures that would only be appropriate under administrative designations no longer applicable to the Coastal Plain. To remedy these issues, we recommend revisions to the Draft EIS and propose that DOI direct US Fish and Wildlife Service (USFWS) to later conduct a targeted amendment to the 2015 Arctic Refuge CCP that describes the effect of the Tax Act and lifts the minimal management category for the Coastal Plain. The Draft EIS must be changed to reflect the Tax Act; BLM should not wait for amendments to the Arctic Refuge CCP to make those changes in the Final EIS.	Surface management prescriptions for the Refuge are established under the USFWS CCP (2015), which will be revised to make it consistent with the Tax Act.
68.	Brook	Brisson	Trustees for Alaska	96981	123	Other Laws	However, it is not clear that BLM has authority over the disposal of any gravel materials on the Coastal Plain. BLM needs to explain FWS role as the administrator and manager of the Refuge and how any such actions would fit with the legal obligations in other statutes, such as the National Wildlife Refuge System Administration Act.	Roles and responsibilities are described in Chapter 1. The USFWS continues to be responsible for managing all federal lands on the Coastal Plain as part of the Refuge, including both leased and unleased areas. However, the BLM is responsible for managing all aspects of the oil and gas program, including the issuance and administration of oil and gas leases, and permitting of all oil and gas activities.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Brook	Brisson	Trustees for Alaska	98269	148	Other Laws	Finally, BLM did not explain its failure to convene a technical workgroup under the terms of the Memorandum Of Understanding Among The U.S. Department Of Agriculture, U.S. Department Of The Interior, And U.S. Environmental Protection Agency, Regarding Air Quality Analyses And Mitigation For Federal Oil And Gas Decisions Through The National Environmental Policy Act Process Understanding (Air Quality MOU), signed June 23, 2011, as requested in our scoping comments. BLM must conduct modeling pursuant to the Air Quality MOU between these agencies for air quality analyses and mitigation in connection with oil and gas development on Federal lands.740	Section V.C.1. of the MOU in part states "When the Lead Agency determines through NEPA scoping, the air quality or AQRVs will be significantly impacted by a proposed action, the Lead Agency will convene a technical workgroup for that proposed action composed of the Agencies to provide advice about the analysis." Before initiating the EIS, BLM considered whether the action may result in significant impacts to air quality or AQRVs, and determined it would not, therefore, the air quality technical workgroup was not convened. Further, the analysis in the Draft EIS is consistent with this determination. Unlike specific development projects, where location, timing, and scope of activities are understood, at this leasing stage, such information is absent. These factors are key to performing useful quantitative air quality analysis/modeling. Given the absence of this information at the leasing stage, such quantitative analysis/modeling would not be helpful to a decision maker.

S. Public Comments and BLM Responses (Other Laws)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	159	Other Laws	While the DEIS mentions the Caribou Treaty, it fails to address how the proposed development scenarios, as well as the BLM's process in developing this DEIS, comport with the treaty's terms. In fact, the BLM has repeatedly failed to adhere to the terms of the Caribou Treaty during the development of this DEIS. For example, the United States has refused requests by the Canadian Government, including First Nations Tribal Governments, to hold public meetings in Canada, so that Canadian subsistence communities can discuss the proposal. The DEIS fails to mention of the role of Canada, the Porcupine Caribou Herd Technical Committee, or the Board during the leasing, exploration, and production processes. Indeed, the chapter on alternatives fails to include any Canadian input. The DEIS fails to include adequate analysis of the impacts of development to Canadian subsistence user communities.	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	—	—	United States Fish and Wildlife Service	97942	242	Other Laws	D-3: Please add the National Invasive Species Act (Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (As amended through the National Invasive Species Act (NISA))). The NISA mandates the Service to provide leadership on national efforts to prevent the spread of aquatic invasive species. The NISA furthered Aquatic Nuisance Species (ANS) activities by calling for ballast water regulations, the development of State management plans and regional panels to combat the spread of ANS, and additional ANS outreach and research. Section 1204 of the Act authorizes the ANS Task Force to provide funding to states that have an ANS management plan. The NISA established the ANS Task Force to coordinate nationwide ANS activities. Page D-6, Executive Orders: There is a newer Executive Order (EO) related to invasive species that should replace or be added to the current reference. Please use EO 13751.	Text has been revised accordingly in Appendix D.
72.	—	—	United States Fish and Wildlife Service	97942	262	Other Laws	Page D-3, Section D.2.2: The fourth bullet discusses the ESA. The first part of this paragraph addresses section 7(a)(2), the consultation provision of the ESA. We suggest also inserting the following language which is contained in section 7(a)(1) of the ESA: "The ESA requires federal agencies, in consultation with and with the assistance of the Secretary, to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species.	Text has been revised accordingly in Appendix D.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	—	—	United States Fish and Wildlife Service	97942	263	Other Laws	Page D-3, Section D.2.2: Bullet 5 addresses MMPA. We suggest adding the following to this paragraph: The USFWS may authorize the incidental take of small numbers of marine mammals of a species or stock only if it can be found that such take will have a negligible impact on a species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence purposes.	Text has been revised accordingly in Appendix D.
74.	—	—	United States Fish and Wildlife Service	97942	264	Other Laws	Page D-4, Section D.2.2: Bullet 2 addresses the Bald and Golden Eagle Protection Act. Please add the following language between the two existing sentences to ensure the full prohibitions of the Act are clear: "The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."	Text has been revised accordingly in Appendix D.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	—	—	United States Fish and Wildlife Service	97942	265	Other Laws	Page D-4, Section D.2.2: Bullet 3 addresses the Fish and Wildlife Coordination Act. We recommend replacing the existing language to clearly explain the legal authorities of the act: "The Fish and Wildlife Coordination Act provides one of the basic legal authorities for assessing the impacts on fish and wildlife resources at water resource development projects. Under the FWCA, any public or private agency under federal permit or license to modify or control for any purpose any stream or other water body is required to consult with the Service with the view to the conservation of wildlife resources by preventing loss of and damage to such resources. The term wildlife resources is explicitly defined to include birds, fishes, mammals, and all other classes of wild animals and types of aquatic and land vegetation upon which wildlife is dependent. Further, the FWCA states that reports determining the possible damage to wildlife resources and an estimation of wildlife loss "shall be made an integral part of any report prepared or submitted by any agency with the authority to authorize" water projects (16 U.S.C. 662 (b),(0).	Text has been revised accordingly in Appendix D.
76.	Brook	Brisson	Trustees for Alaska	98271	291	Other Laws	Moreover, BLM cannot lawfully give away its discretion to control impacts that it purports are not concrete enough to analyze fully at the leasing stage with regard to its ESA obligations. Thus, to comply with the ESA, BLM must ensure that the lease terms clearly retain full discretion to entirely and permanently preclude impacts at later stages.	Consultation under Section 7 of the ESA has been occurring concurrently with development of this EIS to ensure compliance with ESA and MMPA. A biological opinion will be issued prior to issuance of a Record of Decision. Lease Notice 1 makes clear that BLM retains such discretion to assure compliance with the ESA.

S.3.24 Paleontological Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	69211	4	Paleontological Resources	The current review of the potential impact to paleontological resources is not adequate and a thorough cultural and archaeological resources study should be prepared for the project prior to site disturbance. It should include all areas proposed for development at the present time or in a phased development plan	Cultural and archaeological resource studies at a leasing phase are highly speculative due to the lack of specificity of what, where, and when development may occur. Assessment of potential impacts resulting from specific development plans will be a requirement satisfied by future applicants. ROP 29 requires a cultural resource survey "before any ground disturbing activity;" the BLM cannot impose a ROP tied to a lease, prior to a lease being issued.
2.	—	—	Alaska Department of Natural Resources	94102	59	Paleontological Resources	34 Chapter 3, Page 3-43 Clarify language - Paleontological Resources Setbacks from streams for NSO buffers will do little to protect fossils from being eroded by streams as only areas immediately next to streams will be eroded by streams. Streams may do this anyway, so stating buffers will prevent this is an overstated conclusion. Buffers MAY prevent or reduce, but it is not unequivocal.	Development and establishment of structures that would act as protective barriers to erosion (gravel pads, stream bank stabilization, etc.) may protect against exposure of paleontological resources from naturally-occurring bank erosion. Text has been added in Section 3.2.7 to provide additional clarity.

S. Public Comments and BLM Responses (Paleontological Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Pamela	Miller	—	94107	7	Paleontological Resources	There is no mention of requirements of the National Paleontological Preservation Act of 2009 [10] and its requirements: SEC. 6302. MANAGEMENT. (a) In General-The Secretary shall manage and protect paleontological resources on Federal land using scientific principles and expertise. The Secretary shall develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. The DEIS provides no evidence of any inventories of paleontological resources conducted in the Arctic Refuge, nor has it compiled any baseline information specific to the Refuge Coastal Plain. While it states the “program area, and all the North Slope0/ Is widely regarded as fossiliferous” defined as “rich in fossils or fossil potential” (DEIS p. 3-41) citing BLM 2012, that NPRA Integrated Activity Plan does not contain any information about paleontological resources in the Arctic Refuge, nor does BLM 2018a listed as a source for Pleistocene fossils identified “across the North Slope// which include remains that existed at the same time as human habitation, including bears, muskoxen, caribou and moose” (DEIS p 3-42). Table 3-13, PFYC values of Program Area Geologic Bedrock Units does not associate with any maps, such as Map 3-8, but given that “most paleontological resources identified on the North Slope have been identified in areas west of the program area,” (DEIS p 3-42), it seems unlikely that “noted fossil presence in unit” means that such types of fossils have actually been documented in the Arctic Refuge Coastal Plain and seems to means that such Geologic unit encompassing a greater area of the North Slope contains such types of fossils. Table 3-13 indicates that 1.4 million acres of the Refuge Coastal Plain are expected to have “flora and fauna”	Text added in Section 3.2.7 to reference PRPA. Additional information on paleontological resources is also found in Section 3.2.7.

S. Public Comments and BLM Responses (Paleontological Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	fossils present including caribou and other animals and these are relevant to our current understanding of the long relationship of the Gwich'in in the region. Map 3-8, Paleontological resources fails to show source of the information for the different ranked areas, and the classification does not make sense since lumped categories overlap, e.g. (2-3) with (3). Nor is there a map which portrays the various PFYC geologic unit descriptions listed in G.2 (DEIS p. G-6 to G-8). The DEIS fails to adequately describe the potential conflicts between potential sites of paleontological sites and also downplays impacts/ For example, "potential direct impacts on paleontological resources would be limited to future ground-disturbing activities, including drilling and gravel mining/" (DEIS p/ 343). Yet it fails to describe the extent of potential gravel mining that may take place.	(see above)
4.	Pamela	Miller	—	94107	8	Paleontological Resources	Appendix G: Potential Fossil Yield Classification System (PFYC) makes it clear that the "PFYmodel for Alaska is in development" (see also DEIS p. 3-41) and explains that rankings for PFYC and unit descriptions are only preliminary for the CP oil and gas program area (DEIS G-5). How can BLM protect paleontological resources if it has not even compiled any baseline information, but merely discusses geological units, yet those categories are not mapped. Even past information from geological surface geology from the "1002 studies" and earlier has not been compiled nor evidence of review of data from cultural resources or other surveys.	Specific and individual plans for oil and gas development would be required to conduct field studies and impact analyses to describe the potential impact of their proposed development upon the area resource(s). The PFYC model under development would require field validation in the program area in order to confirm or correct the association of paleontological resources to specific geologic units in the program area. Information within the PFYC model may be used by the lease administrator to request specific field investigations for paleontological resources, as the PRPA requires the BLM to manage and protect local resources and to develop plans for inventory and monitoring.

S. Public Comments and BLM Responses (Paleontological Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Tim	Whitehouse	PEER	95601	50	Paleontological Resources	What are key information gaps? There have been no paleontological resource investigations conducted within the Arctic Plain 1002 area.	The in-development PFYC model correlates geological units of the North Slope, largely based on field investigations that have occurred outside of the lease area, with a likelihood of occurrence of paleontological resources; however, the lack of field survey on the geologic units within the project area suggests that this correlation requires validation in order to infer the probability of fossil occurrence. For specific development plans within the lease area, information within the PFYC model may be used by the lease administrator to request specific field investigations for paleontological resources, as the National Paleontological Preservation Act of 2009 requires the bureaus to manage and protect local resources and to develop plans for inventory and monitoring.
6.	Tim	Whitehouse	PEER	95601	52	Paleontological Resources	Paleontological resource investigations, if any, can likely be conducted concurrent with cultural resource investigations to sufficiently identify Pleistocene Epoch paleontological resources that may be located at the surface to determine avoidance, minimization and mitigation standards.	Noted. Pleistocene paleontological resources may be included in the Alaska Heritage Resources Survey dataset, which would be reviewed as part of any cultural resources investigation and text added regarding qualifications specific to paleontology.
7.	Tim	Whitehouse	PEER	95601	53	Paleontological Resources	USFWS may need to authorize and oversee paleontological research on the Arctic Plain 1002 in advance of or during oil and gas related project proposals. Responsibility for paleontological permitting lies partially with the USFWS Regional Historic Preservation Officer and can be accommodated with current regional cultural resources staffing.	Comment noted.

S.3.25 Petroleum Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Elizabeth	Dobbins	—	67482	1	Petroleum Resources	infrastructure (roads/pipelines) must cross the restricted areas. So the maps are misleading also. Or you are trying to minimize the footprint of development in a way that isn't realistic.	New developments, including nonsubsistence infrastructure such as roads or pipelines, would be allowed to occur in restricted areas as detailed in the EIS Chapter 2, Table 2-3, Lease Stipulations, ROPs, and Lease Notice by Alternative.
2.	Philip	Marshall	—	67580	5	Petroleum Resources	A major omission in this document is no discussion of how these new oil & gas fields would tie in to the existing Trans-Alaska Pipeline System. Such an extension of ~120 miles would entail serious construction plans that need to be addressed, most importantly that all such major pipelines, whether elevated or buried, require year-round, hence gravel roads, and possibly a midpoint pump station. From a policy viewpoint, how wise is it to utilize the original TAPS to bring any new oil to market when the TAPS went on-line in 1977, had a design life of 30 years, and thus has outlived its reliability by a dozen years? Is the oil industry willing to replace such a line during the subsequent 85-years of development of ANWR?	The Reasonably Foreseeable Development Scenario (Appendix B) explains that development would connect to TAPS. These pipeline segments within the Coastal Plain are included as pipeline mileage calculations within Appendix B. TAPS is maintained for long-term continued use.
3.	Withheld	Withheld	—	68965	60	Petroleum Resources	31. Chapter 3; section 3.2.6, pages 3-38 to 3-39. The effects analysis for Petroleum Resources includes the following: In the NPR-A the average crude oil spill rate from 1985 to 2010, for large (500 barrels or greater) spills is 0.65 spills per BBO produced, with an average spill size of 1,229 barrels. During that time the North Slope produced a total of 12.40 BBO. The historic small (less than 500 barrels) crude oil spill rate from 1989 to 2009 for the Alaska North Slope is 187 spills per billion barrels produced, with an average spill size of 2.8 barrels (117.6 gallons). During this time 9.4 BBO were produced (BLM 2012). With an estimated 3.4 BBO of production anticipated from the	Spills discussions have been updated in the Final EIS

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Coastal Plain, and assuming the same spill rates as NPR-A, it is reasonable to anticipate a program area spill total of approximately 1,780 barrels of oil spilled in approximately 636 small spills and a total of approximately 2,716 barrels spilled in two or three large spills. In addition to damage to the environment, spills represent a loss of petroleum resources from productive use. Using a high case scenario and a USGS estimate that 9.3 BBO would be economically recoverable (Attanasi and Freeman 2009), it could be expected that there would be approximately 1,739 small spills with a total of approximately 4,869 barrels spilled, and approximately 6 large spills with a total spill size of 7,374 barrels, if the spill rate stays consistent over time. The rate of spills may decrease over time as industry practices improve. This analysis uses data about spills through 2010. Are no more recent data available? Given the importance of spills as a potential environmental effect of this program, the most complete time series of information about the rate and magnitude of this effect should be included here. A longer time series may also allow a comparative analysis to determine if the hypothesized decrease in the rate and size of spills over time due to improvements in technology is supported by data from the North Slope.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Clifford	Peters	—	69347	1	Petroleum Resources	In 2008, the U.S. Department of Energy reported uncertainties about the USGS oil estimates for ANWR and the projected effects on oil price and supplies. "There is little direct knowledge regarding the petroleum geology of the ANWR region.... ANWR oil production is not projected to have a large impact on world oil prices.... Additional oil production resulting from the opening of ANWR would be only a small portion of total world oil production, and would likely be offset in part by somewhat lower production outside the United States.". The DOE reported that annual United States consumption of crude oil and petroleum products was 7.55 billion barrels (1.200x10 ⁹ m ³) in 2006. In comparison, the USGS estimated that the ANWR reserve contains 10.4 billion barrels (1.65x10 ⁹ m ³). Although, only 7.7 billion barrels (1.22x10 ⁹ m ³) were thought to be within the proposed drilling region.	Additional exploration to gain knowledge regarding the petroleum geology of the Refuge would be conducted before development in the area would begin.
5.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	4	Petroleum Resources	- The drilling muds contaminated with toxins like benzene, zinc, arsenic and radioactive materials stay in the surrounding land on a long-term basis. Injection wells that put waste waters and contaminated drilling muds with high pressures into deep soil levels has been associated with higher earthmovement risks. They are planned for the industrialized areas but earthquakes naturally won't be limited to these areas.	Drilling muds are captured when removed from the wellbore and will not touch surface lands. Injection into deeper, stable formations are well known in advance and approved by ADEC.

S. Public Comments and BLM Responses (Petroleum Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Susan	Lubetkin	—	75234	6	Petroleum Resources	List of potential oil production values It's hard to get a sense of how much oil is predicted to be produced from the DEIS. The third paragraph of Appendix B of BLM's Coastal Plain DEIS lists several potential volumes, none of which match the amounts shown in Table B-1 (p. B-5), B-2 (p. B-6), or their combined volumes (Table 5).	Due to the limited knowledge regarding petroleum geology of the Coastal Plain it is impossible to predict future production, which is why this document uses a range of values.
7.	Lin	Davis	—	75891	4	Petroleum Resources	There is no map to show the public the extent of oil pads, ice roads, pipelines, gravel mines and other infrastructure. Likely the acres allowed by Congress would not include other extensive infrastructure needed for the project. Likely a convenient loophole allows more than the public thinks will be developed .	Due to scaling issues and the fact that development locations are unknown it is difficult to create an accurate map of infrastructure that could be constructed under the action alternatives. The Tax Act specifically makes 2,000 acres available for oil production and support facilities, the BLM will not permit any permanent facilities above that acreage.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	102	Petroleum Resources	Resource Size. The DEIS states that the mean estimate of technically recoverable oil in the 1002 area and adjacent state waters and Native Lands is 10.35 BBO and that 90%, or 9.2 BBO, would be economically recoverable at \$70 per barrel in today's dollars. (DEIS, at B-1). Moreover, the DEIS states that oil prices are expected to rise over the next twenty years, indicating that potentially more oil will be recoverable in these areas. (DEIS, at B-1). In 1998, the U.S. Geological Survey's (USGS) 1002 Area Petroleum Assessment reported that at a price of \$30 per barrel an estimated 3 to 10.4 BBO would be economically recoverable.⁷² The DEIS also states that a more recent study shows a mean estimate of 3.4 BBO of economically recoverable oil on the Coastal Plain produced by 2050. (DEIS, at B-1). Due to uncertainties in market forces, the size and number of fields, and the timing of development, the DEIS also estimates that production in the Coastal Plain could be anywhere from 1.5 to 10 BBO. (DEIS, at B-18). To come up with these estimates, assumptions are required about: (1) geology and hydrocarbon presence which are unknown at this point pre-exploration; (2) development costs which can be assumed based on North Slope experience; and (3) taxation regime, regulatory climate, and oil price/demand over the next half-century or more; all of which are uncertain and unknowable. The wide range of values is indicative of this. Each estimated data point should be given broad confidence intervals to reflect the significant uncertainties about the resource.	Production estimates from other documents are quoted as they are presented within those documents. The EIS uses a production value range and assumptions are detailed to the extent practicable. Disclaimers are made regarding the uncertainty of projections where appropriate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	103	Petroleum Resources	Proposed Production Levels. The DEIS states: To minimize the chance that the resultant impact analysis will understate potential impacts, the hypothetical scenarios described in this document represent optimistic high-production, successful discovery and development scenarios in a situation of favorable market prices. (DEIS, at B-2). Despite this assertion, the DEIS fails to present an optimistic high-production development scenario. The BLM proposes a single Hypothetical Development Scenario composed of up to three Anchor Fields with a minimum of 400 MMBO economically recoverable oil each. This totals a minimum of 1.2 BBO for the Hypothetical Development Scenario. The BLM's Hypothetical Development Scenario fails to reach even half of the lowest reported value of mean economic reserves as estimated by the U.S. Energy Information Administration (EIA). ⁷³ Moreover, the BLM fails to propose a mean or upside Hypothetical Development Scenarios in line with reported reserves in order to meet its stated goal of representing optimistic high-production development.	Production rates in the timeline of this program are limited by the time it takes to construct infrastructure and bring wells on-line as wells as the 2000 acre surface development cap. Total production amounts over the life of the fields in the Refuge could easily reach estimates. The 400 million barrels is minimum needed to warrant construction of a single CPF. It does not imply that it represents the largest potential oil field.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	104	Petroleum Resources	Possible Production Levels. The DEIS assumes that approximately eight years after its Record of Decision (ROD), production from the first Anchor Field would begin and then ramp up over a minimum of nine years to a peak of 100 MBOPD which would hold for three years before declining at a rate of 8% per year to the economic limit. (DEIS, at B-8, B-11). Based on this scenario and with an estimated 50 MBOPD economic limit, the sum of production over the life of the Anchor Field is approximately 400 MMBO. By staggering development of the two subsequent Anchor Fields to begin when drilling ends for the previous one, peak production for the BLM's Hypothetical Development Scenario for all fields increases to 156 MBOPD in 2045. (See Figure 7). Figure 7. Production level for the BLM's Hypothetical Development Scenario composed of three Anchor Fields. Figure 7. Production level for the BLM Hypothetical Development Scenario composed of three Anchor Fields. To calculate peak production for USGS's mean estimate of 9.2 BBO economically recoverable reserves a single field was modeled with the same timing, drilling, and decline assumptions as above but with a total field life of fifty years. (See comparison in Figure 8). This demonstrates that the DEIS greatly understates likely production.	The 400 million barrels is minimum needed to warrant construction of a single CPF. It does not imply that it represents the largest potential oil field. Each satellite pad may contain up to 30 well slots and it's assumed a 6 mile horizontal reach for production.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	107	Petroleum Resources	Length of Development, Social Context of Future Financial Decisions. The DEIS estimates that development activities could continue for up to fifty years, with last production eighty-five years or more from the first lease sale. (DEIS, at B-7). This means that in addition to initial development decisions made in the first five to twenty years after ROD, key investment decisions will continue to be required throughout mid-century. Figure 10 overlays this time frame on a chart of potential global carbon dioxide concentrations and increases in atmospheric temperatures. By mid-century, it is possible that there will be no desire or no need for more high-cost oil from remote regions due to alternatives. In addition, continual advances in Lower-48 shale extraction technology over the next few decades will continue to contest high-cost oil from remote regions, such as the 1002. The DEIS fails to accurately portray the multiple economic and social dimensions of the decision milieu facing potential developers, which could minimize the value of the resource and resulting production levels, especially in late life.	Long term trends in oil and gas production and development, as projected by the U.S. Energy Information Agency, were taken into account in developing the reasonably foreseeable development scenario.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	123	Petroleum Resources	When will acres be initially granted? The DEIS fails to specify the criteria and process for when acres will be secured by parties. Possibilities include: (1) at lease sale to successful bidders; (2) when development plans are approved; (3) when financial investment decisions are made; (4) when permits are secured; or (5) when construction begins. If acres are granted too early in the development process, especially if granted to oversized speculative development plans or to operators unwilling to bear the expense of small cramped pad development, there will be few acres among the 2,000-acre limit left for remaining development. Conversely, if acres are granted too late in the development process there will be a race to that deadline resulting in potentially incomplete plans and a contested queue. Either way BLM fails to address how orderly development of the resource will be assured in the granting of surface acres.	The approach for allocating the 2,000 acres of allowable production and support facilities will be described in the Detailed Statement of Sale accompanying the Notice of Sale for the first lease sale.
13.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	124	Petroleum Resources	How will acres be allocated? The DEIS fails to specify the criteria and process for how many acres will be granted to parties. Possibilities include: (1) as many acres as requested, potentially on a first come first served basis; or (2) based on metrics such as "X" acres per well or well pad, or "Y" acres per central processing facility (CPF) pad, or "Z" acres per airstrip. Without constraint, developers will seek the most acres possible and the cumulative effect could be to oversubscribe, strand acres, and limit development. The BLM fails to address how orderly development of the resource will be assured in allocating surface acres.	The approach for allocating the 2,000 acres of allowable production and support facilities will be described in the Detailed Statement of Sale accompanying the Notice of Sale for the first lease sale. The 2,000-acre limit may potentially delay some development, but as long as acreage is not constrained, resources would not be stranded unless uneconomic. Table B-3 reflects approximate timeframes.

S. Public Comments and BLM Responses (Petroleum Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	125	Petroleum Resources	When will the acres be surrendered? The DEIS fails to specify the criteria and process for releasing acres once production is over. Possibilities include: (1) at the economic limit of each pad; (2) when production equipment is turned off for the final time; (3) when production equipment and gravel are removed; (4) when the tundra is restored. In terms of economics, each developer will have a different view of end-of-economic life for an individual well, well pad, and field, based on their own corporate cost structures, future price calls, discounting factors, and cost of capital for further development. In addition, some developers may be willing to operate a well pad or CPF at breakeven production levels (or even negative cash flow) to postpone significant dismantlement and abandonment costs. BLM fails to address how orderly development of the resource will be assured in surrendering surface acres.	Section S.1.2 of this appendix describes how facility acreage will be tracked, including at the reclamation stage.
15.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	126	Petroleum Resources	How will developed surface acres be tracked for individual developers? The DEIS fails to address how it will monitor acres granted to a developer against acres actually used by the developer once gravel has been placed. In addition, the DEIS fails to address how it will deal with over and under variances by a developer (i.e., more acres placed than allowed or more acres resulting from gravel creep over time, and fewer acres placed than needed, especially if acres are granted in preliminary design stages before final design acres are known).	Section S.1.2 of this appendix describes how facility acreage will be tracked.

S. Public Comments and BLM Responses (Petroleum Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	127	Petroleum Resources	How will the acres be administrated? The DEIS also fails to outline how cumulative acres will be monitored and tracked to determine how many acres remain to be issued at any point in time and to ensure the cap is not violated. Specifically, the DEIS fails to indicate: ? How the BLM will maintain a database with this information for industry and public use. ? How the BLM will update the database for gravel road and pad acre creep due to maintenance practices, the consequences it will impose on developers for such creep, and how remaining acres in the 2,000-acre cap will be adjusted accordingly. ? How the BLM will prevent gravel acre speculation by developers who may request more acres than needed or may initially request acres based on preliminary designs that require more acres than the finalized designs. ? How the BLM will prevent developers from speculative bidding or delaying development in order to hold acres that will be worth more in the future. The DEIS fails to address how orderly development of the resource will be assured in administering the program and how it will minimize allotment variances sought by operators.	Section S.1.2 of this appendix describes how facility acreage will be tracked.
17.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	128	Petroleum Resources	Finally, BLM fails to address how surface acres required to connect discontinuous development areas by roads, pipelines, and power lines will be allocated to each connected development and applied towards the total cap of 2,000 acres. The DEIS (DEIS, at 3-221, 3-223) states that under each alternative a network of gravel roads would be needed to connect discrete facilities:	The approach for allocating the 2,000 acres of allowable production and support facilities will be described in the Detailed Statement of Sale accompanying the Notice of Sale for the first lease sale.
18.	Withheld	Withheld	—	83698	3	Petroleum Resources	there should have been analyses that include the transportation of oil and gas products, the refining of oil and gas products, and the consumption of oil and gas products.	The climate change impacts of these downstream oil and gas activities is analyzed in section 3.2.1 of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Withheld	Withheld	Resource Development Council	85053	2	Petroleum Resources	The development footprint limited by law is roughly one-fifth the size of Dulles International Airport in Virginia or less than half the size of Ted Stevens Anchorage International Airport in a refuge larger than Vermont, New Hampshire, and Massachusetts combined, or five times the size of Maryland. These and similar comparisons should be documented in the Final EIS to illustrate the minimal footprint of development	Because the development footprint is spread across a wide area and the 2,000-acre cap does not include all related development impacts (i.e., ice roads and ice pads do not count toward the limit) a comparison of this sort is misleading.
20.	Withheld	Withheld	Government of the Northwest Territories	92862	5	Petroleum Resources	These uncertainties could be partially addressed with more details provided in mitigation and monitoring plans which should form part of the requested supplemental draft EIS. The mitigation and monitoring plans should: · Be designed for the entire duration of the project from pre-construction to reclamation. · Provide information for effective mitigations and adaptive management. · Be inclusive of all parties with a management authority; parties should have the ability to review the plans prior to their approval.	Mitigation and monitoring plans would be designed during planning and permitting for specific exploration and development projects which will occur after leasing. These future projects would be subject to NEPA and mitigation and monitoring and would reflect the most up-to-date standards at the time.
21.	Withheld	Withheld	Government of the Northwest Territories	92862	21	Petroleum Resources	The BLM's interpretation of PL 115-97 could result in unintentional loopholes in the calculation of the 2,000 acres of surface disturbance. For example, the total area of a building used in the exploration, development, production or transportation of an oil and gas program would not count towards the 2,000 acres of surface disturbance if it was built on piles or blocking, only the footprint of the piles would be used in the calculation of the 2,000 acres of surface disturbance. This would be problematic, as the ground underneath the building would not be usable habitat for wildlife.	Buildings would be mounted on piles or blocking; however piles or blocking would be mounted on a gravel pad which would count toward the 2,000-acre limit.

S. Public Comments and BLM Responses (Petroleum Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	—	—	Alaska Department of Natural Resources	94102	58	Petroleum Resources	33 Chapter 3, Page 3-39 Clarify regulatory roles Sentence two on this page notes that "Operators would be required to implement spill prevention and control plans in compliance with applicable federal regulations." This sentence should be modified to include the phrase "and state regulations" because in some instances state requirements for spill response are more stringent than federal regulations. Please clarify.	Text added as requested.
23.	—	—	Alaska Department of Natural Resources	94102	76	Petroleum Resources	52 Glossary, Page 12 Clarification No-Surface-Occupancy (NSO). This definition needs to be modified for clarity as certain essential surface facilities are allowed in or allowed to cross NSO areas within Lease Stipulations and ROPs. These facilities include essential roads and pipelines, docks, and seawater treatment plants. Add: Facilities such as essential roads, pipelines, a dock, and a seawater treatment/desalinization plant may be allowed in these areas on a case-by-case basis.	Text added as requested.
24.	Pamela	Miller	—	94107	3	Petroleum Resources	BLM provides no standard or requirements for "reclaimed acreage," or "Reclamation/" The goal should include to restore to natural conditions of plant cover, species diversity, permafrost and hydrological flow patterns. For example, simply removing gravel from the surface of the tundra is not a sufficient standard.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Pamela	Miller	—	94107	5	Petroleum Resources	The geographic extent and spread across the Coastal Plain for oil prospects was mapped in the 1987 "1002 report" based on the results of the government sponsored 2-D seismic exploration program, see Fig III-1, "seismically mapped prospects (1-26) and resource blocks (A-D) in the 1002 area (Prepared by the Bureau of Land Management)!" ! similar map of prospect areas was not presented in the DEIS, nor did BLM provide no justification in the DEIS for any geological differences in data or interpretation since then, and the differences with the USGS studies it cites and others recent USGS Assessments which it doesn't.	2D seismic has been re-processed several times as methods have improved over time, additionally data from wells drilled in other parts of the North Slope has led to an improved understanding of the regional geology. These factors account for the differences in data and interpretations. All relevant USGS studies were considered.
26.	Withheld	Withheld	—	94632	2	Petroleum Resources	The draft EIS also fails to consider the potential carbon footprint and other impacts of the development of methane hydrate deposits in the coastal and sub-sea permafrost. According to one of the professionals who were available to answer questions at the Fairbanks public hearing meeting for this draft EIS, there is nothing in the proposed lease arrangement which would restrict or preclude the development of these methane hydrate resources by the leaseholders. The potential resources and problems represented by methane hydrates are vast and should definitely not be left unconsidered. The amount of carbon trapped in methane hydrates in the shallow geosphere is estimated to be far greater than the carbon in all fossil fuel deposits of any kind, and all of the atmosphere combined. This fact has been well known for quite a while, including an article in Chemical Geology (Kvenvolden, 1988). More specifically the volume of methane in a single type of methane hydrate deposit under the PBO and Kuparuk River oil field is estimated to have "about twice the volume of conventional gas in the Prudhoe Bay field." (Collett, 1993). A successful test of a well for the production of gas from	Methane hydrates are not being considered as viable resources for the purposes of this Leasing EIS. No commercial development of methane hydrates has occurred to date. If a gas market were available, it is assumed stranded conventional gas within current infrastructure would be developed first.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	methane hydrate deposits was started by 2002 (Kerr, 2004). Moreover, "the first long-term production tests of methane hydrates will likely start in 2012 in the North Slope permafrost, and offshore Japan." according to an article in the Journal of Natural Gas Science and Engineering published in the same year (Koh et. al., 2012). I do not personally have time to investigate the more current state of the art and near future projections for this technological field and the true extent of the resource in the study area, and that is not my responsibility. The point is, the potential development of methane hydrate resources during the timeframe of the proposed leases seems to be neither unlikely nor insignificant, and it therefore would be irresponsible to fail to consider the impacts of such development in the proposed lease areas. Many aspects of such "unconventional gas" development in the area should be considered in the EIS, including the increase in the potential carbon footprint of the lease program, the increased amount of habitat loss due to development in the area, impacts to groundwater quality, and the socioeconomic impacts.	(see above)
27.	Rhonda	Anderson	—	98138	6	Petroleum Resources	The Environmental Impact Statement must be transparent and aware of the dangers that are known from the fracking industry to the land, water, and the rise in the earthquakes on the North Slope. This is going to be aggravated as climate change is happening at a faster rate and felt most harshly in the Arctic regions.	No unconventional hydraulic fracturing regime or unconventional production is anticipated in the Coastal Plain. The geologic conditions in the Coastal Plain are not conducive to this type of fracking.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Brook	Brisson	Trustees for Alaska	98270	188	Purpose and Need	Additionally, the EIS should discuss how recent major oil discoveries in the Arctic's Nanushuk formation which underlies the NPR-A and state lands will result in increased flow in the Trans-Alaska Pipeline System (TAPS) regardless of production from the Coastal Plain. These discoveries include ConocoPhillips' Willow project 1998 and Oil Search's Nanushuk project. 1999 For the next several decades, TAPS will not face risks from low flow.	Additional production from new developments is expected to be offset by continued long-term declining production from aging legacy fields such as Prudhoe Bay and Kuparuk.
29.	Robin	Stebbins	—	12		Petroleum Resources	The acreage covered by roads shown in Table B-5 cannot be derived from the hypothetical developments shown in Figures B-1 and B-2. There is no road from the barge landing to the CPF, though it could be included in the Roads total. The DEIS should be clarified to show how the road totals are arrived at.	Figures B-1 and B-2 are not intended to show actual developments or to be used for estimating distances, or road mileages. Winter roads, which do not require gravel, will be used in some instances for example from barge landing to the CPF. Road miles and gravel needs are derived from estimated distances between facilities based on similar developments and best guesses about possible facility locations. These will be described in greater detail in the plans for any proposed developments.

S.3.26 Physiography

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Donald	Walker	—	68	21	Physiography	The title of the Draft Leasing EIS, “Coastal Plain Oil and Gas Leasing Program Draft Environmental Impact Statement”, as well as the maps, descriptions of the physiography, and general script of the Draft EIS create a misperception that the 1002 Area is a generally flat landscape, similar to the coastal plain to the west of the ANWR. Within the Refuge, the Brooks Range takes a broad swing northward to within 30-50 km of the Arctic Ocean (Fig. 5), all but eliminating the flat coastal plains within the 1002 Area. Most of the 1002 Area was originally mapped in 1965 as part of the White Hills Section of the Arctic Coastal Plain¹⁶, which includes the White Hills and Franklin Bluffs and is quite different from the Teshekpuk Lake Section, which is dominated by thaw lakes, drained thaw-lake basins, and vast areas of wet low-centered ice-wedge polygons. A 1982 map of the “terrain types” of the 1002 area better portrays the topographic contrasts within the 1002 Area (Appendix 2, Figure A9)¹⁷, which is dominated by foothills (45%) (Fig. 6), hilly coastal plain (22%), and river floodplains and deltas (25%). A small portion of the 1002 Area is part of the Sadlerochit Mountains (0.03%). Flat thaw-lake plains, such as those typical in the northern portion of the National Petroleum Reserve-Alaska (NPR-A) and the Prudhoe Bay region, comprise only about 3% of the 1002 Area. The steep topographic gradients in the 1002 Area are reflected in the geology, soils, snow regimes, and vegetation that create a mosaic of habitats that allows for the high biological diversity of the region. The rivers and streams draining the mountains form broad braided floodplains and deltas in some areas and deep ravines and gullies in others that	The term “Coastal Plain” is used for consistency with the language in Public Law No: 115-97 Section 20001. A footnote has been added to clarify use of the term “Coastal Plain.” Text has been added in Section 3.2.4, Physiography, to better describe the topography of the program area, including a description of terrain types from Walker et al. (1982).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	also affect snow distribution, hydrology, permafrost and vegetation of the region. ¹⁶ Wahrhaftig, C. 1965. Physiographic divisions of Alaska. U.S. Geological Survey, Professional Paper 482.	(see above)
2.	Donald	Walker	—	68	26	Physiography	Why do these difference in microtopography matter? Studies at Prudhoe Bay, ²⁰ Toolik Lake, ²¹ Barrow, ²² and elsewhere ²³ have shown that variations in microtopography account for much of the variation in biological diversity and ecosystem function of tundra landscapes. Compressing the tundra eliminates much of the microtopographic diversity, which is important to the distribution of numerous plant species, insects, small mammals, and birds. The depressions can change the character of vegetated surfaces by compressing the snow and tundra, leading to increased snow accumulation in the tracks. During the spring lingering snow and water in the trails can promote ponding of water on the tundra surface, and channel water along the tracks. This alters the micro-surface energy balance, which affects the active-layer and permafrost conditions. In some sensitive landscapes, this can trigger melting of ice in the permafrost ²⁴ leading to thermokarst and thermal erosion of the trails	Text has been added to Section 3.2.4 Physiography to reference microtopographic impacts of seismic surveys including citation of Walker et al. (2019). Permafrost is addressed in Section 3.2.8 Soils. Ecosystem functions and biodiversity are addressed in Section 3.3 Biological Resources.
3.	Donald	Walker	—	68	140	Physiography	Figure A9: Topography of the 1002 Area with boundaries of primary terrain units according to Walker et al. (1982). ¹²⁷ (Topographic Base Map: USGS). The areas of the map units in order of dominance are: FH, Foothills (45%); River floodplains and deltas (25%); HCP, Hilly coastal plains (22%); TLP, Thaw-lake plains (3%); Mountainous terrain (0.03%).	Information from Walker et al. (1982) has been added to Section 3.2.4 Physiography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Martha	Raynolds	—	67039	7	Physiography	The physiography of the EIS area is poorly described. Within the Prudhoe Bay oilfields and the NPR-A, thaw-lake plain is the main physiographic type. It only covers 3% of the Arctic Refuge 1002 Area, where the main physiographic types are foothills and hilly coastal plain. This contrast is critical, as the Draft EIS often refers to studies from Prudhoe Bay and NPR-A as if they were completely applicable to the Arctic Refuge. In most cases, they are not because the landscape is so different.	Text has been added to Section 3.2.4 Physiography to better describe the physiography and inform the reader that the physiography of the program area is not the same as previously developed areas of the North Slope.
5.	Withheld	Withheld	On behalf of 312 scientists	71076	3	Physiography	Acknowledge differences in North Slope landscapes. Although there is oil exploration and development to the west in the Central Arctic (e.g., Prudhoe Bay and the northeastern NPRA), there are major differences in these landscapes compared to the Arctic Refuge Coastal Plain. As noted above and in the National Academy of Sciences/National Research Council report, fish and wildlife habitats on the Coastal Plain within the Arctic Refuge are compressed between the Brooks Range and Beaufort Sea in a narrow band carved by a dozen major rivers and streams. This fact has significant implications for impacts on fish, wildlife, and the landscape and the avoidance and mitigation of those impacts. Moreover, the Arctic Refuge Coastal Plain is a heterogeneous area dominated by foothills, hilly coastal plain, riparian floodplains, and a relative lack of water in lakes, which is strikingly different from thaw-lake plains to the west where oil and gas activities are underway. This has huge implications for the feasibility, design, and cost of an industrial-scale oil and gas program on the Coastal Plain, as well as for impacts on fish, wildlife and the natural landscape.	Text has been added to Section 3.2.4 Physiography to better describe the physiography and inform the reader that the physiography is not the same as previously developed areas of the North Slope. Section 3.2.10 Water Resources provides further details regarding the scarcity of lakes and their distribution in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Janet	Jorgenson	—	81671	41	Physiography	This map based on Wahrhaftig (1965) should not be used to delineate the boundary between coastal plain and foothills in the 1002 Area. The hand-drawn paper map was created in the days before geographic information systems, at a very broad scale of 1:2,500,000. Given the scale, it is inappropriate to zoom into a small area of the state and use that map to show divisions. The line work on the original map was not done at a scale to justify that. The division between coastal plain and foothills provinces is roughly drawn and follows no discernable topographical breaks on the landscape. Similarly, the piece of the 1002 Area shown as mountains on map 3-1 is not topographically distinct from the foothills. The distinct edge of the Brooks Range is 6 miles further south and the whole part mapped as mountains inside the 1002 Area is not really mountains, but still foothills. At the scale the map was drawn in 1965, a few miles hardly mattered. To use this map meant you had to add length to the EIS by describing the mountains and their percent cover in the different development scenarios. It was unnecessary.	Wahrhaftig (1965) first defined physiographic provinces in Alaska and is cited by many subsequent papers. It provides background and a basis for describing the general physiography of the program area. A new figure (Map 3-1, Topography) and additional detail and clarification regarding topography in the program area have been added to Section 3.2.4 Physiography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Janet	Jorgenson	—	81671	44	Physiography	The Wahrhaftig map shows only the very highest parts of the foothills as foothills, generally above 1000 feet elevation. For Wahrhaftig's 'coastal plain' (EIS said it is ~90% of the 1002 Area), the description says 'a smooth plain rising gradually from the Beaufort Sea to a maximum elevation of 600 feet above sea level (asl).' But in the 1002 Area, the area mapped as 'coastal plain' on Map 3-1 (following Wahrhaftig) does not fit the description given in the EIS. Checking a USGS topographic map, it is clear that the mapped 'coastal plain' reaches well above 600 feet elevation, to an elevation of 1000 feet in many places. In fact, the boundary seems to be drawn attempting to follow the 1000 foot elevation line. That elevation is almost double the maximum elevation given for the "coastal plain" division in the EIS. The area mapped as 'coastal plain' also is very hilly, especially in the western half of the 1002 Area. For example, in the Carter Creek Hills, there is a summit 354 feet elevation that is less than 1.5 miles from the coast. South of it the terrain drops off and then rises again to the Brooks Range. The 'plain' is certainly not 'smooth'.	The text in Section 3.2.4 Physiography has been revised to more clearly describe the topography of the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Janet	Jorgenson	—	81671	45	Physiography	The text descriptions of the "coastal plain" and "foothills" as mapped on the Wahrhaftig map are confounded with descriptions of those divisions as mapped on the Nowacki map. They should not be interchangeable because the Wahrhaftig map shows 90% of the 1002 Area as 'coastal plain', compared to less than 50% on the Nowacki map. Wahrhaftig's description of the 'coastal plain' was actually 'a smooth plain rising imperceptibly from the Beaufort Sea to a maximum elevation of 600 feet'. Instead, as mapped it rises to an elevation of 1000 feet as close as 13 miles to the coast. Since the 600-foot elevation and the "smooth plain rising imperceptibly" clearly weren't correct in the 1002 Area, descriptions in EIS were taken from descriptions of the smaller-extent 'coastal plain' as mapped by Nowacki. For example, the paragraph in the DEIS about alluvial fans is taken from the Arctic NWR CCP, from a description of the coastal plain as defined by Nowacki.	The text in Section 3.2.4 Physiography has been revised to more clearly describe the topography of the program area.
9.	Mark	Jorgenson	—	94411	13	Physiography	The information on physiography and topography presented in the EIS is incomplete and out of date. The physiography map of Wahrhaftig (1965), which was based on coarse resolution topography mapping, has long been superseded by higher quality mapping of physiography and ecoregions (Gallant et al. 1995, Nowacki et al. 2001, and Jorgenson and Grunblatt 2013).	Wahrhaftig (1965) first defined physiographic provinces in Alaska and is cited by many subsequent papers. It provides background and a basis for describing the general physiography of the program area. A new figure (Map 3-1) and additional detail regarding topography in the program area have been added to the text in Section 3.2.4 Physiography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Mark	Jorgenson	—	94411	14	Physiography	The DEIS notes that the Coastal Plain as mapped in the 1002 Area rises to 1000 ft at its southern boundary; this is strong evidence that the mapping is not accurate and should not be used. The more rugged upland topography in the western portion of the area has large implications for snow distribution, hillslope hydrology, and ice road construction. A rigorous analysis of effects of topography on varying impacts of facility development among the various Alternatives needs to be conducted.	The text in Section 3.2.4 Physiography has been revised to more clearly describe the topography of the program area.
11.	Mark	Jorgenson	—	94411	15	Physiography	For scientific accuracy, the proposed development area should be referred to as the "1002 Area" not "Coastal Plain" because nearly half of it is not coastal plain.	The term "Coastal Plain" is used for consistency with the language in Public Law No: 115-97 Section 20001. A footnote has been added to Section 3.2.4 Physiography to distinguish between the use of Coastal Plain as the name of the program area and the lower-case physiographic term.
12.	Withheld	Withheld	—	96867	3	Physiography	Impacts of gravel mining on physiography would last beyond the development phase because the pits remaining from gravel extraction would typically not be completely backfilled, and any remaining depression could fill with water and become a permanent lake. Gravel mines are described further in Section 3.2.9, Sand and Gravel Resources." Has anyone considered what will happen if permanent lakes are created where none now exist?	Section 3.2.9 Sand and Gravel Resources and Section 3.2.10 Water Resources describe the changes that would occur after mine site closure, including formation of a new waterbody and changes to drainage patterns. Section 3.3.2 Fish and Aquatic Species, Direct and Indirect Impacts, describes how former mine sites on the North Slope can provide new habitat for fish. Section 3.3.3 Birds describes how gravel mine sites would result in both long-term loss of some avian habitats and also creation of new habitat for waterbirds, depending on how the mines are reclaimed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Withheld	Withheld	—	96867	4	Physiography	Likewise, if the gravel pad for the STP is placed in water rather than on land, similar effects on physiography would occur. This impact would last throughout the development phase and for some period after the structure is removed during reclamation." Some period is how long? This kind of indefinite language is unacceptable.	The time period would depend on site-specific conditions such as local topography and bathymetry as well as local wind and wave action characteristics.
14.	—	—	United States Fish and Wildlife Service	97942	235	Physiography	There is no discussion about the difference in gradient and terrain between the 1002 and NPR-A and we recommend this information be included in the document. Differences in physiography are highly relevant given that the area is to be managed in a manner similar to the NPR-A yet the physiography is significantly different. Additionally, a comparative discussion between the two areas is appropriate given that there is significant comparison of water availability in Section 3.2.10.	Text has been added to Section 3.2.4 Physiography to clarify that the topography of the Coastal Plain is different than other parts of the North Slope that have been developed. Additionally, the program area is not to be managed in a manner similar to the NPR-A, rather the oil and gas program would be implemented in a manner similar that in the NPR-A. Specifically the Tax Act states, "the Secretary shall manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et seq.) (including regulations)."
15.	Nora Jane	Burns	—	98158	1	Physiography	MS. NORA JANE BURNS: Just one last. On your leasing program when you start coming up with your leasing program, have you guys factored -- we are starting to get more earthquakes up in our mountain area. And what type of plans will you require the oil companies to have? Because that -- we are getting more earthquakes either up in the mountains or towards the west in the lagoons, and they are more frequent. You can -- every other day we will see 4.3, 5. whatever, you know.	Seismicity is addressed in Section 3.2.5 Geology and Minerals under Geologic Hazards. Future oil and gas development would be required to comply with state and federal safety standards, including applicable seismic design requirements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Brook	Brisson	Trustees for Alaska	98269	88	Physiography	BLM's analysis in the draft EIS also inadequately accounts for potential changes to physiography. The draft EIS states, "This potential long-term impact would begin during the construction phase and would last throughout the development phase until the gravel is removed and the site has been restored to pre-program conditions."495 As stated above, 1) because of ground compression, removal of all gravel fill may result in a ground surface elevation that is below that of the surrounding tundra, which could in turn fill with water and form lakes that were not present prior to development; and 2) it is unlikely if not impossible that reclamation will result in pre-program conditions within a human-relevant time frame.	Text has been added to Section 3.2.4 Physiography indicating that if the site is not restored to pre-program conditions (e.g., a depression remains) impacts from gravel fill placement could be permanent.

S.3.27 Public Health

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	56769	1	Public Health and Safety	This DEIS has also failed to address appropriately the projected excess morbidity and mortality to United States citizens from the pollutants that are emitted during fossil fuel combustion including particulates, hydrocarbons, ground-level ozone production, and nitrogen oxide production. It is well established that such pollutants are causative factors for both cancers and a variety of respiratory diseases.	Analysis includes air quality impacts and likelihood for increased chronic respiratory disease rates. ROP 6 requires air modeling during project-specific analysis after lease sales are complete.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	56769	2	Public Health and Safety	The DEIS has not provided an appropriate estimate of the spread of disease bearing insects, such as ticks, by increased warming brought on by combustion of the fossil fuels that may derive from exploitation of the Arctic Refuge. These diseases, such as Lyme disease or viral encephalitis, affect both human and wildlife populations and may be causative in driving some species toward extinction. No accounting of this possibility has been undertaken and must be approached with careful and detailed analysis.	Text has been updated to include a section on infectious diseases that analyzes diseases affecting Kaktovik residents and the potential impacts of oil and gas development in the Coastal Plain.
3.	Peter	Stern	—	69296	64	Public Health and Safety	Section 3-4-11 Public Health starting on page 3-239 The discussion in this section only covered Kaktovik and the North Slope Borough. 3-240 talks about food security with no mention about the Gwich'in villages.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
4.	Peter	Stern	—	69296	65	Public Health and Safety	Page 3-242 discussion about Direct and Indirect impacts on public health excludes the Gwich'in villages.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Peter	Stern	—	69296	66	Public Health and Safety	Page 3-243 Diet and Nutrition. Again, no discussion about Gwich'in villages.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
6.	Becky	Long	—	69710	10	Public Health and Safety	Flaring also produces particulate matter and toxics such as benzene which are known carcinogens. This affects the environment and human health.	Analysis includes air quality and the pollutants emitted during fossil fuel combustion and the potential for respiratory diseases. ROP 6 requires air modeling during project-specific analysis after lease sales are complete.
7.	Jill	Nogi	Environmental Protection Agency	71634	19	Public Health and Safety	In Section 3.4.11 Public Health, as part of the characterization of the affected environment, the document indicates that air quality in Nuiqsut is meeting air quality standards. As we have noted above, Kaktovik will be in closer proximity to potential development in the Coastal Plain than Nuiqsut. In addition, not all projects that have been permitted around Nuiqsut have begun development. Finally, we note that many residents of Nuiqsut continue to be concerned about air quality; the EPA is receiving an increasing number of calls expressing such concern. For these reasons, we caution against relying upon air quality data for Nuiqsut to draw conclusions about the potential impacts to air quality in Kaktovik.	Analysis includes air quality and the pollutants emitted during fossil fuel combustion and the potential for respiratory diseases. ROP 6 requires air modeling during project-specific analysis after lease sales are complete.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Jill	Nogi	Environmental Protection Agency	71634	37	Public Health and Safety	While the DEIS does include discussion of potential impacts to public health, it does not include a detailed analysis, stating "This EIS does not analyze specific developments in the program area; therefore, a health impact assessment was not completed for this analysis. Health impact assessments are expected to be developed for future development projects that would require additional NEPA analysis." We note that a cumulative look at the overall health impacts of all reasonably foreseeable development in the program area would help to inform agency decision-makers and the public prior to issuance of leases. Future project-specific analyses may not be conducive to conducting such a cumulative look. We recommend that the BLM consider how best to obtain information regarding potential cumulative health impacts across the proposed leasing areas and to disclose this information in the Final EIS.	The cumulative impacts section includes analysis of reasonably foreseeable development in the Coastal Plain including oil and gas development. The EIS identifies a hypothetical development scenario for all action alternatives including up to 2,000 acres of surface development as authorized in Section 20001 of PL 115-97. Additional site specific analysis including a Health Impact Assessment would be conducted when specific projects are proposed after lease sales are conducted.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Richard	Edwards	—	74281	51	Public Health and Safety	The Draft EIS fails to: (1) describe the inspection and control process that BLM will use to monitor and manage exploration and development operators in this remote environment, (2) characterize the performance of the BLM in monitoring and managing past and current development activities in similar remote, arctic environments and (3) describe how BLM's ability to adequately monitor and inspect exploration and development activities would be maintained at an acceptable level given declining agency budgets, personnel shortages and increasing occurrence of government shutdowns. Lease Stipulations, Required Operating Procedures and other applicable regulations and standards will require a significant amount of oversight and control---especially since the proposed operations will involve multiple lessees and sub-contractors. In addition, the document fails to clearly acknowledge that emergency response relies largely on other agencies (e.g., ADEC, EPA). What are the risks associated with this reliance? What is the past track record of emergency response efforts on the North Slope? Will staffing levels and training of personnel in these sister agencies be sufficient to respond adequately to a major emergency---now and over time? The Draft EIS must be revised to address concerns related to BLM's ability to properly administer lessee operations and the ability of agencies to respond to an emergency.	The BLM has responsibility to ensure compliance with any authorizations associated with implementation of the oil and gas leasing program. Authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Matthew	Rexford	Native Village of Kaktovik	74308	5	Public Health and Safety	Public Health Study - Longevity of Life In 2017, the Journal of American Medical Association published a study by Laura Dwyer-Lindgren and colleagues titled "Inequalities in Life Expectancy among US Counties 1980 to 2014: Temporal Trends and Key Drivers.5 " The study objectives was to "estimate annual life tables by county from 1980 to 2014; describe trends in geographic inequalities in life expectancy and age-specific risk of death; and assess the proportion of variation in life expectancy explained by variation in socioeconomic and race/ethnicity factors, behavioral and metabolic risk factors, and health care factors." The results of the study show that the average life expectancy of people living in the North Slope Borough over this 34-year interval increased by 13 years. No other area experienced a higher increase in life expectancy, and very few other Boroughs saw an increase of that magnitude. The factors identified as explaining this enormous increase over a relatively short amount of time were poverty rate, high school graduation, unemployment, and access to health care. The North Slope Borough, which receives 96% of its revenue through taxes placed on industry infrastructure on the North Slope, is the largest local employer in the region and is responsible for schools, health care, and provides basic sanitation services in our communities. When considered with the fact that oil was discovered on the North Slope in the 1960's and production began June 20, 1977, it is clear that economic development from oil and gas industry activity has had a huge positive impact on the health of the people living on the North Slope and these facts should be included in the final EIS.	Additional discussion related to life expectancy was added to the Affected Environment section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Dr. Julianne Lutz	Warren	—	74344	4	Public Health and Safety	Public health-there is NO baseline health assessment of consequences of oil and gas.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.
12.	Christina	Tippin	City of Point Hope	75230	2	Public Health and Safety	Public Health section of the DEIS, you imply that economic development is a negative thing, neglecting to consider that Kaktovik, like all rural Alaska communities, has been operating in a cash economy for over 50 years and that the dual cash and subsistence economic model is not a new phenomenon. Suggesting that economic generation from development as a cause of increased substance abuse, domestic violence, and injury without providing information about where this data comes from is irresponsible and condescending.	The EIS references the BLM 2012 National Petroleum Reserve-Alaska (NPR-A) Final Integrated Activity Plan/Environmental Impact Statement for the statement about increased substance abuse, domestic violence, and injury. The EIS also highlights the beneficial impacts of oil and gas development in the Economic Impacts on Health section of Impacts Common to All Alternatives.
13.	Christina	Tippin	City of Point Hope	75230	3	Public Health and Safety	There are many studies, some conducted by the North Slope Borough, and some from outside sources, which show how oil and gas development has facilitated the ability of the North Slope Borough to provide critical public health and sanitation services on the North Slope, which has led to increased life expectancy and healthier communities. As a North Slope resident that has witnessed these changes first hand, I hope that you would include the conclusions of these studies into the Public Health section of the Final EIS.	The EIS cites the NPR-A EIS when identifying positive economic impacts of oil and gas development. Additional references and citations have been reviewed and included to supplement the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Christina	Tippin	City of Point Hope	75230	5	Public Health and Safety	The DEIS also describes road access as negative because of potential injury. Kaktovik already has roads and are experienced in using them; few, if any, incidences occur on roads, most injuries occur off-roads where emergency response is more difficult and dangerous.	Draft EIS states that the potential for increased injury arises on roads constructed for oil and gas development and that no impacts are expected along Kaktovik system roads. Text was added to the Safety section under Impacts Common to all Alternative to show the potential for accidents would be due to conflicts between oil and gas traffic and subsistence users on oil and gas roads.
15.	Chandra	Turner	Inuvialuit Game Council	75902	49	Public Health and Safety	Public health and wellbeing*: Marmot M, Wilkinson RG. Social determinants of health. 2nd. ed. Oxford: Oxford University Press; 2006. 380 pages Richmond, 2009. The social determinants of Inuit health: a focus on social support in the Canadian Arctic. International Journal of Circumpolar Health 68:5: 471-487 Lucyk and McLaren 2017. Taking stock of the social determinants of health: a scoping review *Most sources of traditional knowledge above include information on the importance of subsistence to health and wellness.	A section on Social Determinants of Health has been added to the EIS. Suggested references have been reviewed and incorporated into this section when appropriate.
16.	Withheld	Withheld	City of Atkasuk	81039	2	Public Health and Safety	As a resident of the North Slope, I also find some of the language in the DEIS to be condescending and insulting as it relates to the Public Health impacts as a result of development. You have stated that economic improvements generated from development are a contributor to increased substance abuse, domestic violence, and injury without citing any sources to explicitly linking development and the stated social ills to back up those patronizing remarks. The DEIS presents no analysis comparing drug and alcohol levels on the North Slope with rural communities in Alaska that don't receive economic benefits from oil and gas development to legitimize this conclusion.	The EIS references the BLM 2012 National Petroleum Reserve-Alaska (NPR-A) Final Integrated Activity Plan/Environmental Impact Statement for the statement about increased substance abuse, domestic violence, and injury. The EIS also highlights the beneficial impacts of oil and gas development in the Economic Impacts on Health section of Impacts Common to All Alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Withheld	Withheld	City of Atkasuk	81039	3	Public Health and Safety	You have also neglected to include how the life expectancy on the North Slope has increased as a result of economic self-determination driven by development in our region, which should be included in any Public Health analysis. The Journal of American Medical Association published a study in 2017 showing that life expectancy in our region has increased by over 10 years over the course of the 30-year study. This huge increase in health and life expectancy for our people can be attributed to improvements to our schools, infrastructure, health clinics, and critical public services that our regional government is able to provide for our people through their ability to tax industry infrastructure in the region. As a resident of the North Slope, I have witnessed how the region has changed in the decades since development began in the region. It was not so long ago that the North Slope was considered to be living in "third world" conditions, and we remember not having running water, flush toilets, schools or health clinics. This must be accounted for in the Final EIS; it matters.	Text highlighting the increase in life expectancy for the North Slope from 1980-2014 was added to the Affected Environment. The Dwyer-Lindgren et al. 2017 study was included in the analysis.
18.	Herbert	Kinneeveauk	Tikigaq Corporation	81041	2	Public Health and Safety	In the Public Health section of the DEIS, you imply that economic development is a negative thing, neglecting to consider that Kaktovik, like all rural Alaska communities, has been operating in a cash economy for over 50 years and that the dual cash and subsistence economic model is not a new phenomenon. Suggesting that economic generation from development as a cause of increased substance abuse, domestic violence, and injury without providing information about where this data comes from is irresponsible and condescending.	The EIS references the BLM 2012 National Petroleum Reserve-Alaska (NPR-A) Final Integrated Activity Plan/Environmental Impact Statement for the statement about increased substance abuse, domestic violence, and injury. The EIS also highlights the beneficial impacts of oil and gas development in the Economic Impacts on Health section of Impacts Common to All Alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Herbert	Kinneveauk	Tikigaq Corporation	81041	3	Public Health and Safety	There are many studies, some conducted by the North Slope Borough, and some from outside sources, which show how oil and gas development has facilitated the ability of the North Slope Borough to provide critical public health and sanitation services on the North Slope, which has led to increased life expectancy and healthier communities. As a North Slope resident that has witnessed these changes first hand, I hope that you would include the conclusions of these studies into the Public Health section of the Final EIS.	The EIS cites the NPR-A EIS when identifying positive economic impacts of oil and gas development. Additional references and citations have been reviewed and included to supplement the analysis.
20.	Herbert	Kinneveauk	Tikigaq Corporation	81041	5	Public Health and Safety	The DEIS also describes road access as negative because of potential injury. Kaktovik already has roads and are experienced in using them; few, if any, incidences occur on roads, most injuries occur off-roads where emergency response is more difficult and dangerous.	Draft EIS states that the potential for increased injury arises on roads constructed for oil and gas development and that no impacts are expected along Kaktovik system roads. Text was added to the Safety section under Impacts Common to all Alternative to show the potential for accidents would be due to conflicts between oil and gas traffic and subsistence users on oil and gas roads.
21.	Brook	Brisson	Trustees for Alaska	81368	85	Public Health and Safety	The acute reference exposure limits should be used as a comparison for short-term development impacts and non-cancer reference concentrations for chronic inhalation should be used as a comparison for annual impacts.	Respiratory diseases are discussed in the Air Quality section of Impacts Common to all Action Alternatives. A non-communicable and chronic diseases section was added to the EIS and includes analysis of chronic respiratory diseases.
22.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	86	Public Health and Safety	BLM should also assess long-term cancer risk.	EIS includes a Non-communicable and Chronic Disease section that analyzes potential cancer risks for Kaktovik residents.
23.	Steven	Amstrup	Polar Bears International	81368	87	Public Health and Safety	BLM should assess these health risks along with the cumulative HAP impacts to the exposed populations, including the Native Village of Kaktovik, visitors to the Coastal Plain, industry workers, and others who are in the vicinity of the program area for subsistence purposes.	Impact analysis includes the Native Village of Kaktovik, visitors to the Coastal Plain, and other villages dependent on subsistence resources within the 1002 Area. Impacts to industry workers will be included in project-specific NEPA analysis after leasing sales are conducted.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Megan	Williams	o.b.o. Trustees for Alaska	81368	88	Public Health and Safety	BLM's HAP assessment should be a cumulative one, not just an analysis of the incremental risk associated with the proposed action, which would be imposed on top of existing health risks in the area.	Appendix F of the Draft EIS includes a list of reasonably foreseeable future projects analyzed in the cumulative impacts section of the Draft EIS. The Public Health and Safety Cumulative Impacts section analyzed those reasonably foreseeable future projects in Appendix F and how the proposed leasing actions would combine with existing and future projects in the 1002 area.
25.	Steven	Amstrup	Polar Bears International	81368	89	Public Health and Safety	The HAP assessment should include the full suite of Mobile Source Air Toxics (MSAT), methanol, chlorinated solvents, carbonyl compounds used in flaring and diesel particulate matter and should encompass all phases of an oil and gas program, including construction activities as well as oil and gas production activities.	ROP 6 requires air modeling for any project proposed after lease sales are completed. The air modeling will identify any pollutants related to development and whether they exceed national air quality standards. Any pollutants identified as exceeding the national standards will be analyzed for impacts to public health.
26.	Allison	Athens	—	81746	11	Public Health and Safety	How are health impacts measured and by what percentage to the rate of sexually transmitted diseases increase such that BLM can measure that an orientation program will effectively protect community members and operators?	Infectious Disease section was added to the EIS including analysis of sexually transmitted diseases.
27.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	32	Public Health and Safety	34 Inequities in Life Expectancy Among US Counties, 1980 to 2014: Temporal Trends and Key Drivers. July 2017. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2626194	Text highlighting the increase in life expectancy for the North Slope from 1980-2014 was added to the Affected Environment. The Dwyer-Lindgren et al. 2017 study was included in the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	32	Public Health and Safety	The DEIS should be amended to include the positive public health impacts from resource development. According to the Journal of the American Medical Association, life expectancy of Alaska Natives in the North Slope Borough has increased significantly (by 13 years) since the 1980s. ³⁴ This outcome is attributed to the discovery of the rich oil reservoirs in our region which have since provided an economic base for the North Slope Borough and State of Alaska. At the local level, resource development has afforded health clinics in each village, a hospital on the North Slope, increased sanitation, reliable sewer, water, and heat, and emergency services. These amenities, individually and collectively, improve the health and wellbeing of our communities and are funded by continued resource development in our region.	Text highlighting the increase in life expectancy for the North Slope from 1980-2014 was added to the Affected Environment. The Dwyer-Lindgren et al. 2017 study was included in the analysis.
29.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	33	Public Health and Safety	Instead of making assumptions, BLM should review the Health Impact Assessment conducted for the Point Thomson project and data from the NSB Health Assessment ³⁵ and supplement it with updated information as necessary. A baseline health assessment for the community of Kaktovik is essential prior to leasing and can help inform both the BLM and industry's future activity in the area. As well as provide a metric to carefully monitor the overall health of the community throughout leasing and resource development. ASRC expects that prior to development in the Program Area, an updated HIA will be performed.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts. Information from the 2018 Nanushuk Baseline Health Assessment was added to the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	15	Public Health and Safety	VOICE feels that the DEIS has not adequately covered the positive public health impacts that development has brought to our region. Our regional government, the North Slope Borough (NSB), is responsible for more territory than any other lo-cal government in the nation. The NSB receives 96% of their revenue from prop-erty taxes that they levy on industry infrastructure on the North Slope, which ena-bles them to provide services that were never accessible before in the Arctic. The Borough School District provides vocational and academic education for people of all ages; NSB health clinics provide modern medical services to resi-dents in even the smallest and most remote of villages. The Municipal Services Department operates water, sewage, and electric utilities, plows roads and run-ways, and maintains landfills. Other NSB departments provide housing, police and fire protection, search and rescue, and other critical services to our com-munities. Altogether, the NSB is the single largest local employer on the North Slope, employing over 63% of the workforce. These benefits of modern Ameri-can civilization, common in the rest of the nation, have been built on the foun-dation of the North Slope oil industry.	The EIS cites the NPR-A EIS when identifying positive economic impacts of oil and gas development. Additional references and citations have been reviewed and included to supplement the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	17	Public Health and Safety	The BLM should consider updating the Health Impact Assessment completed for the community of Kaktovik in the Point Thomson project EIS and the NSB Health Assessment ¹¹ , both completed in 2012. As VOICE mentioned in our scoping com-ments, establishing a baseline health assessment for the community of Kaktovik is essential to this process and will allow the BLM to make appropriate recom-mendations for activity and help to inform future development in the 1002 Area. Baseline health data and air quality studies from the outset will allow for careful monitoring of the overall health of the community over time.	The Point Thomson EIS has been referenced multiple times for the Public Health and Safety section of the Draft EIS as well as the NSB health assessment. The 2018 Nanushuk Baseline Health Assessment was added to the analysis. A baseline health assessment for Kaktovik would be performed when specific projects are identified.
32.	Rebecca	Logan	The Alliance	84264	6	Public Health and Safety	The industry has an excellent track record when it comes to employing best management practices and extensive training programs for North Slope workers, such as the mandatory safety training course provided through the industry-organized North Slope Training Cooperative. The Alaska Safety Handbook provides standardized safety procedures and best practices for Alaska oil and gas operations.	Analysis of safety impacts to industry employees would be included in project-specific NEPA analysis after lease sales are completed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Withheld	Withheld	Resource Development Council	85053	4	Public Health and Safety	Alaska Senate President Cathy Giessel recently cited an article in the Journal of the American Medical Association (published in May 2018) that revealed the most dramatic increase in average life expectancy of Americans between 1980 and 2014 occurred in the North Slope and the Northwest Arctic boroughs, which saw an eight to 13-year increase in life expectancy at birth. The researchers' discussion indicated socioeconomic, behavioral and healthcare factors combined to explain 82 percent of the contributing elements in the change of life expectancy. What was happening in Alaska, especially on the North Slope and in the Northwest Arctic Borough, during these years? In 1977, North Slope oil production came on line and in 1990 the Red Dog Mine within the Northwest Arctic Borough began production. Both natural resource development activities generated a sustainable economy in their respective regions, providing jobs to local residents and sharply improving the quality of life in the Arctic through a broad array of public services and much better access to quality health care in local communities. Oil and mineral production generated revenues, which funded education, construction of modern schools, healthcare programs and clinics, clean drinking water, wastewater treatment, and good-paying jobs, transforming both rural and urban Alaska. These socioeconomic factors and the expansion of life spans in the region should be acknowledged.	PH&S 6 - Text highlighting the increase in life expectancy for the North Slope from 1980-2014 was added to the Affected Environment. The Dwyer-Lindgren et al. 2017 study was included in the analysis.

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34.	Jill	Nogi	Environmental Protection Agency	71634	20	Public Health and Safety	In addition, the document states that "Researchers also sampled air and water for [volatile organic compounds] in Nuiqsut. Over half of the air samples included VOCs, but none exceeded federal and Alaska air quality standards." We note that VOCs are hazardous air pollutants and as such, they are more commonly compared to risk-based concentrations developed for specific environmental media, such as air and water. In addition, it is worth noting that VOCs generally do not persist in surface water because they tend to rapidly volatilize into the air. We recommend that the EIS provide additional information regarding the method and results of the air and water VOC sampling, to clarify these statements for agency decision makers and the public.	The EIS was amended to state the following and will include the new citation: Researchers also sampled air and water for VOCs in Nuiqsut using EPA methods. Over half of the air samples contained VOCs, though none of the VOC concentrations exceeded screened levels set by multiple federal agencies. VOCs specifically associated with crude oil development were either not detected or were found at low concentrations (below all standards and screen levels for all of the collected samples. None of the water samples had VOC concentrations that exceeded ADEC water quality standards (ANTHC 2011).
35.	Jill	Nogi	Environmental Protection Agency	71634	12	Public Health and Safety	Future project-specific air quality modeling: Under Required Operating Procedure 6, the BLM may require future project-specific proposals to include air quality monitoring, emissions inventory development, air quality modeling, and/or emission reduction measures. We support the future use of these tools to understand and prevent potential air quality impacts. We do not support the assertion in the DEIS that "All action alternatives are likely to be below applicable air quality standards for all phases of a future development project," based upon reference to previous project-specific air quality modeling. Due to different meteorology in the Coastal Plain compared to previously analyzed projects, as well as the proximity of Kaktovik to the potential development, such analyses may not be representative of potential near-field impacts from specific projects.	The statement was revised in the EIS: "Since limited information exists to estimate air quality impacts for all action alternatives, site-specific analysis will be performed at the time a project is proposed to determine actual impacts at sensitive receptor locations and identify any measures necessary to reduce impacts on air quality and public health."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Withheld	Withheld	Government of the Northwest Territories	92862	82	Public Health and Safety	The BLM analysis does not include a detailed discussion and analysis of how the human health, well-being and nutritional requirements of the NWT PCH subsistence users, specifically the Gwich'in and Inuvialuit, will be impacted by the program, the severity of these impacts, and any mitigative measures of actions that will be taken to address these impacts. Recommendation The GNWT recommends the EIS explicitly state and/or require that the Health Impact Assessments "expected to be developed for future development projects that would require additional NEPA analysis," (3- 239) include the NWT subsistence users of the PCH, specifically the Gwich'in and Inuvialuit. The GNWT recommends health impacts resulting from changes in diet and nutrition to Northwest Territories peoples be included in the analysis of Alternatives, including an analysis of the severity of these impacts as determined for each Alternative.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
37.	Amy	Law	Government of Yukon	94076	23	Public Health and Safety	The draft EIS fails to demonstrate how the Bureau of Land Management could be successful in its required operating procedure 7: "ensur[ing] that permitted activities do not create human health risks by contaminating subsistence foods," when the procedure can be waived by Authorized Officials. This approach should be reconsidered.	ROP 7 does not include a waiver by Authorized Officials. The procedure would be required for any development projects.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Tim	Whitehouse	PEER	95601	71	Public Health and Safety	What information is currently available to address the information needs for subjects? The Liberty Draft EIS released July 2017 includes a Health Baseline Assessment covering all North Slope villages and Kaktovik. A comprehensive Health Impact Assessment was released in 2013 as part of the Point Thomson Final EIS and includes the following categories for all North Slope communities, including Kaktovik: Social Determinants of Health Accidents and Injuries Exposure to Potentially Hazardous Materials Food, Nutrition, and Subsistence Activity Infectious Disease Water and Sanitation Non-communicable and Chronic Diseases Health Services Infrastructure and Capacity	Discussion for all 8 Health Effect Categories has been added to the EIS.
39.	Tim	Whitehouse	PEER	95601	73	Public Health and Safety	A health baseline assessment focusing on potential health benefits and impacts from oil & gas exploration and development in the ANWR 1002 Coastal Plain does not exist. Multiple health baseline assessments are complete or in-process for oil & gas projects across the North Slope, which includes a demographic profile, baseline health assessment, subsistence activity profile, summary of harvest data, and potential mitigating factors, etc. as it relates to North Slope communities generally, and specific to Kaktovik. The outcomes and main findings from these recent Health Impact Assessments could help inform environmental assessments and information needs to address management questions as they relate to Public Health considerations for future oil & gas exploration and development in the ANWR 1002 Coastal Plain.	The Draft EIS includes data from the baseline health assessments for the Point Thomson and NPR-A EISs. The 2018 Nanushuk Baseline Health Assessment was added to the analysis for the EIS A baseline health assessment for Kaktovik would be conducted for project-specific NEPA analysis after lease sales are conducted.

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40.	Tim	Whitehouse	PEER	95601	74	Public Health and Safety	What studies/surveys need to be conducted to fill those information gaps? Additional health assessments, from what already exists, may not be necessary to evaluate potential health impacts from exploration activities (e.g., seismic). Some level of future Health Impact Assessment may be considered to help inform lease plan reviews and/or specific project proposals for future oil & gas development in the 1002 region.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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41.	Edward	Rexford	Native Village of Kaktovik	95607	12	Public Health and Safety	In 2017, the Journal of American Medical Association published a study by Laura Dwyer-Lindgren and colleagues titled "Inequalities in Life Expectancy among US Counties 1980 to 2014: Temporal Trends and Key Drivers. " The study objectives was to "estimate annual life tables by county from 1980 to 2014; describe trends in geographic inequalities in life expectancy and age-specific risk of death; and assess the proportion of variation in life expectancy explained by variation in socioeconomic and race/ethnicity factors, behavioral and metabolic risk factors, and health care factors." The results of the study show that the average life expectancy of people living in the North Slope Borough over this 34-year interval increased by 13 years. No other area experienced a higher increase in life expectancy, and very few other Boroughs saw an increase of that magnitude. The factors identified as explaining this enormous increase over a relatively short amount of time were poverty rate, high school graduation, unemployment, and access to health care. The North Slope Borough, which receives 96% of its revenue through taxes placed on industry infrastructure on the North Slope, is the largest local employer in the region and is responsible for schools, health care, and provides basic sanitation services in our communities. When considered with the fact that oil was discovered on the North Slope in the 1960's and production began June 20, 1977, it is clear that economic development from oil and gas industry activity has had a huge positive impact on the health of the people living on the North Slope and these facts should be included in the final EIS.	Text highlighting the increase in life expectancy for the North Slope from 1980-2014 was added to the Affected Environment. The Dwyer-Lindgren et al. 2017 study was included in the analysis.

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42.	Harry K.	Brower Jr.	North Slope Borough	95612	52	Public Health and Safety	Notably, resource development activities have contributed funds that allow for health clinics in each village, a hospital on the North Slope, increased sanitation, reliable sewer, water, and heat, and emergency services. BLM should recognize these benefits and acknowledge that the Leasing Program will provide additional opportunities to further improve public health on the North Slope.	Economic Impacts of Health section of Impacts Common to All Alternatives includes the positive impacts of oil and gas revenue on community infrastructure including a reference to the capital projects listed in Kaktovik's comprehensive development plan.
43.	Harry K.	Brower Jr.	North Slope Borough	95612	74	Public Health and Safety	3.4.11 3-245 Public Health Services: The influx of workers could bring more risk of seasonal flu and cotnmunicable diseases such as STis, TB, etc.	An Infectious Disease section was be added to the EIS.
44.	Kaarle	Strailey	—	95670	5	Public Health and Safety	What baseline data for human health has been gathered?What would be required of lease holders to monitor and mitigate any potential health impacts?	Mitigation and monitoring measures would be developed for specific projects during the NEPA analysis and results of the Health Impact Assessment.
45.	Kevin	Kane	Sierra Club, Western Watersheds	96216	3	Public Health and Safety	Introduction of diseases to local peoples and animals from increased disease vectors (people imported to the area to work in exploration) must be analyzed.	An Infectious Disease section was be added to the EIS.
46.	Gail	Mayo	Arctic Audubon Society	97769	4	Public Health and Safety	In addition starving disoriented polar bears may pose a threat to oil field workers. This is not addressed in the DEIS	Specific safety concerns would be identified during project-specific NEPA analysis and mitigation measures developed to address safety concerns.
47.	—	—	United States Fish and Wildlife Service	97942	208	Public Health and Safety	In multiple DEIS sections (e.g., Water Resources, Terrestrial Environment), description of impacts from "dust," "fugitive dust," "erosion," "scour," and "sedimentation" need to include the potential for exposure of terrestrial and aquatic biological communities, and subsistence users that rely on those, to contaminants of concern including heavy metals. Such exposure may occur through earth-disturbing activities (depending on the underlying geology) and along roadsides (from vehicle traffic).	Draft EIS includes Contamination of Food Sources under Impacts Common to all Action Alternatives that analyzed potential impacts to food sources. Monitoring contaminants in subsistence foods (ROP 7) would help address subsistence user concerns related to contaminants and identify potential human health issues.

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48.	Rhonda	Anderson	—	98138	5	Public Health and Safety	There is little consideration for the irreparable damage that will happen from the contamination of precious fresh water, land, and air. Human health will plummet with the rising cases of asthma, cancers, and diabetes. There will be and there will be expected to be contamination as long as there is a detailed there's a long and detailed history of what happens with extractive resources.	The Public Health and Safety analysis includes potential impacts from spills and potential pollutants entering air or water sources near the village of Kaktovik. A chronic diseases section was added to the EIS that includes discussion of cancer, diabetes, and chronic respiratory diseases. Additional analysis will occur when specific projects are identified and the level of development, type of equipment, and season of construction are identified.
49.	Brook	Brisson	Trustees for Alaska	98269	82	Public Health and Safety	The EIS needs to analyze the likelihood of worker injuries and deaths related to oil and gas development on the Coastal Plain. For example, this past December a worker on the North Slope died from an "equipment accident." ⁴⁸⁴	Analysis of safety impacts to industry employees would be included in project-specific NEPA analysis after lease sales are completed.
50.	Brook	Brisson	Trustees for Alaska	98269	146	Public Health and Safety	BLM also entirely fails to analyze how hazardous air pollutant emissions may impact public health. ⁷³³ The EIS acknowledges that the Clean Air Act regulates hazardous air pollutants which may impact human health, ⁷³⁴ but then never again mentions how oil and gas activities on the Coastal Plan may produce emissions which are potentially hazardous to human health. This omission is unacceptable. BLM needs to carefully consider how increased air pollution may impact exposed populations, including residents of Kaktovik, Refuge visitors, industry workers, and others who are in the vicinity of the program area for subsistence purposes. ⁷³⁵	Air pollution is analyzed under Impacts Common to All Alternatives for Public Health and Safety and includes analysis and results of oil and gas development in Nuiqsut. In addition, ROP 6 requires air modeling when specific projects are identified and a Health Impact Assessment conducted at that time would consider the air modeling results in its assessment.

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51.	Brook	Brisson	Trustees for Alaska	98270	192	Public Health and Safety	The NAS Committee on Health Impact Assessment has analyzed the integration of HIA's into the NEPA process. The Committee recommends that the use of HIA's "should be focused on applications in which there is the greatest opportunity to protect or promote health and to raise awareness of the health consequences of proposed decisions."2022 The NAS concluded that "improving the integration of health into EIA practice under NEPA and related state laws is needed and would advance the goal of improving public health."2023 To be consistent with the "changing expectations for what constitutes a sufficient examination of human health in the regulatory process" and with precedent established in Alaska, the BLM should conduct an HIA for the Coastal Plain at the Lease DEIS stage. The lease stage presents the greatest opportunity to promote health.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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52.	Brook	Brisson	Trustees for Alaska	98270	193	Public Health and Safety	BLM must conduct an HIA at the lease sale stage in order to meet NEPA requirements. As described in 40 C.F.R. § 1502.15, data and analyses in an EIS shall be commensurate with the importance of the impact. The public health impacts of the proposed Coastal Plain leasing program are one of the most important impacts that the government must analyze. NEPA analysis, after all, is largely premised on taking a hard look at the “human environment” (emphasis added). ²⁰²⁴ Under 40 C.F.R. § 1502.24, agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. As described in our scoping comments, completing an HIA is a necessary step to insure the professional and scientific integrity of this process. ²⁰²⁵ NEPA standards require an ex ante analysis of “reasonably foreseeable, significant impacts on the human environment.” ²⁰²⁶ Implementing regulations are explicit that public health is among these impacts. ²⁰²⁷ NEPA thus requires that federal agencies analyze the environmental effects, including health effects, in an EIS as soon as it is “reasonably possible” to do so. ²⁰²⁸	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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53.	Brook	Brisson	Trustees for Alaska	98270	194	Public Health and Safety	Deferring the HIA to future specific projects developed under additional and separate NEPA analyses, as the BLM has stated it will do, is an inadequate substitute for estimating the total health impacts from the lease sales and oil and gas program as a whole. For "[i]t is only at the lease sale stage that the agency can take into account the effects of oil production in deciding which parcels to offer for lease."2030 While BLM states that "health impact assessments are expected to be developed for future development projects," there is no meaningful mechanism to ensure that this analysis is completed at a project-level EIS. Moreover, as is occurring in the NPR-A, once a lease is issued, the BLM cannot select the no action alternative when a project is being considered unless it specifically retains this right and authority. Such circumstances all but insure that a meaningful analysis of a leasing program's risk to human health and wellness will not be completed prior to BLM making an irretrievable commitment of resources. As such, a meaningful HIA should be completed at the leasing stage so that the public fully understands the risks of a Coastal Plain leasing program.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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54.	Brook	Brisson	Trustees for Alaska	98270	195	Public Health and Safety	Section 20001 of the Tax Act that opened the Coastal Plain to lease sales states that the Secretary of Interior "shall manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et seq.) (including regulations)[emphases added]."2031 The implementing regulations of the NPRP-A include establishing the National Petroleum Reserve-Alaska (NPR-A), for which an HIA was conducted in 2012.2032 In directly analogous circumstances, BLM and its sister agency BOEM have used the HIA to integrate public health concerns into the EIS decision-making framework at the planning or lease stages.2033 In at least six instances in Alaska, HIA's were conducted during the leasing stage of proposed oil and gas development projects.2034 BLM, for example, integrated an HIA as part of the Northeast National Petroleum Reserve Supplemental Environmental Impact Statement to address public health impacts of proposed oil leasing in the Northeast NPR-A.2035 The Northeast area of the Reserve was significantly important to the traditions and food supply of neighboring Alaska Native communities, where the degree of public health impact was proportional to the impacts to subsistence.2036 The HIA made a number of recommendations which BLM adopted, including: additional protections for key hunting and fishing areas; measures to minimize disruption of local game; cultural orientation for workers; and a requirement for a more in-depth and site-specific consideration of health impacts for any major oil development on leased lands in the future. In order to manage the Coastal Plain lease sales similar to the NPR-A, the BLM should similarly integrate an HIA into the Coastal Plain Lease DEIS.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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54. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	An HIA analysis conducted for the Coastal Plain Lease DEIS should focus on how oil leasing, and post-lease exploration, construction, operation, seismic activities, and the cumulative effects of development will expose residents to potential health risks, as well as how direct and indirect determinants that positively contribute to health may be compromised by development-related activities.2037 A Coastal Plain HIA should also similarly explore mitigation strategies.2038	(see above)
55.	Brook	Brisson	Trustees for Alaska	98270	196	Public Health and Safety	One best practice approach the HIA identified is early consultation with public health expert agencies in the coordination of health assessments to avoid duplicative efforts.2045 This best practice approach is also consistent with NEPA requirements of cross-disciplinary collaboration between natural, physical, and social sciences to further its objectives.2046 Notably, BLM did not consult the HIA Program or any other entity with public health expertise when conducting the public health analysis for the Coastal Plain Lease DEIS. It also did not engage in gathering pre-development baseline data to determine conditions prior to potential disruption. BLM's proposed approach of deferring any potential HIA's to future stages of development fails Alaska's "best practices approach" of HIA completion at the earliest possible opportunity.2047 BLM's public health DEIS analysis thus fails to meet Alaska's best practices approach or comply with legal directives.	The Draft EIS includes ROPs designed to mitigate impacts of potential development on Kaktovik residents and subsistence harvesting including contamination of wildlife and consultation with subsistence harvesters prior to development.

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56.	Brook	Brisson	Trustees for Alaska	98270	197	Public Health and Safety	In order to complete an adequate HIA, BLM would need to include a "description of the baseline health status of the population; an analysis of the direct, indirect, and cumulative health consequences of the proposed action and alternatives; and a consideration of potential mitigation measures to address the health concerns identified by the analysis."2048 An adequate completion of these steps "might be considered equivalent to" conducting an HIA.2049 Baseline studies to determine pre-development conditions should include air and water quality, rates and factors of, among other conditions, asthma, obesity (and overweightness), diabetes, cancer, chronic obstructive pulmonary disease, cardiovascular diseases, cerebrovascular diseases, unintentional injury, substance abuse, depression, and suicide. Comprehensive baseline information pertaining to subsistence resources and practices must also be captured. The direct, indirect, and cumulative impacts of proposed development on subsistence and human health, mental health, risk of harm and injury, and climate change should also be addressed. The HIA can integrate all of the data, public comments, impacts and recommendations to systematically address health outcomes and determinants prior to inclusion in final NEPA documents. Adequate completion of these steps would also require BLM to consider an array of health-focused mitigation measures. An example can be found within the HIA for Red Dog mine, which includes mitigation and monitoring requirements.2050 Although a helpful guide, the Point Thomson Oil and Gas leasing EIS/HIA is not a sufficient substitute for a project-specific HIA. An HIA must be conducted specifically for the Arctic National Wildlife Refuge Coastal Plain which should cover a broader geographic area than just	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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56. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Nuiqsut, Kaktovik, and the North Slope Borough generally, as was done for Point Thomson. 2049 National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. Appendix A at 110. https://doi.org/10.17226/13229 (accessed Jan. 23, 2019). The Baseline community health analysis report completed for the North Slope Borough for the NPR-A IAP/EIS in July, 2012, may be one example, wherein the baseline report essentially constituted an HIA. http://www.northslope.org/assets/images/uploads/BaselineCommunityHealthAnalysisReport.pdf (accessed Jan. 23, 2019).	(see above)
57.	Brook	Brisson	Trustees for Alaska	98270	198	Public Health and Safety	In conclusion, BLM's decision not to complete an HIA fails to meet NEPA standards and Tax Act requirements for rigorous environmental review at every stage. Its decision was not "consistent with recent NEPA analyses on the North Slope," given the established practice of HIA's conducted at the lease sale stage for proposed oil and gas development on the North Slope. This decision is not consistent with the use of HIA's at the lease sale stage by Department of Interior agencies as part of the NEPA process. BLM's approach ignores scoping comments that clearly raised this issue for analysis now. BLM must conduct a systematic and project-specific HIA for the proposed lease sales on the Coastal Plain as part of a revised draft EIS.	While HIAs can aid NEPA analyses for certain types of actions, they are not required. Agencies have discretion as to how to analyze health impacts. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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58.	Brook	Brisson	Trustees for Alaska	98270	199	Public Health and Safety	Over and above the absence of an HIA, BLM's analysis of public health in the DEIS has significant shortcomings and must be substantially revised. As an initial matter, BLM fails to address all of the factors which may impact public health. HIA's expressly recognize eight different Health Effects Categories (HECs) that agencies must consider in assessing impacts to public health. HECs supply the fundamental framework for these analyses and allow the HIA practitioner to systematically review each human health area in the light of a project design, to look at all possible health effects. The HECs required for evaluation are: Social Determinants of Health (SDH); Accidents and Injuries; Exposure to potentially hazardous materials; Food, Nutrition, and Subsistence Activity; Infectious Disease; Water and Sanitation; Non-communicable and Chronic Diseases; Health Services Infrastructure and Capacity. ²⁰⁵³ The DEIS does not recognize the HECs. Alternatively, the NSB has identified health impact determinants in their 2014 Health Indicators Report. At a minimum, the DEIS needed to acknowledge and fully address one or the other of these important sources of health indicators. The DEIS fails to do so, and as discussed below, where it addresses some of these indicators, its analysis is insufficient. A revised draft EIS is necessary to address the shortcomings of BLM's analysis.	Discussion for all 8 Health Effect Categories has been added to the EIS. The NSB 2014 Health Indicators Report was added to the analysis. Updated data from Alaska Department of Health and Social Services, Behavioral Risk Factor Surveillance System, and the U.S. Census American Community Survey was added to the EIS where available.

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59.	Brook	Brisson	Trustees for Alaska	98270	200	Public Health and Safety	The demographic and health information cited within the DEIS is outdated and incomplete. The BLM references a 2012 document and states that the analysis is based on information "through 2010."2055 This data is too old and more recent health data should be utilized for the purposes of this EIS.	The 2012 NPR-A document includes a baseline health assessment that includes the village of Kaktovik. An updated baseline health assessment would be completed during NEPA analysis of specific projects in the 1002 area. Data was also taken from the NSB 2015 census and Kaktovik's 2015 Comprehensive Development Plan. Updated data from Alaska Department of Health and Social Services, Behavioral Risk Factor Surveillance System, and the U.S. Census American Community Survey was added to the EIS where available.
60.	Brook	Brisson	Trustees for Alaska	98270	201	Public Health and Safety	Moreover, the BLM's reliance on data from the North Slope Borough (NSB) has limitations. It fails to capture the entire impacted population and account for communities on the southside of the Brooks Range, in both the United States and Canada. The community of Utqiagvik, with its considerable size and health care infrastructure, also has the potential to skew borough-wide data and is not representative of the smaller communities, like Kaktovik, that are more likely to be impacted by the leasing program. At a minimum, BLM must acknowledge that such community-specific data is incomplete or unavailable pursuant to 40 C.F.R. § 1502.22.	The 2012 NPR-A document includes a baseline health assessment that includes the village of Kaktovik. An updated baseline health assessment would be completed during NEPA analysis of specific projects in the 1002 area. Data was also taken from the NSB 2015 census and Kaktovik's 2015 Comprehensive Development Plan. Updated data from Alaska Department of Health and Social Services, Behavioral Risk Factor Surveillance System, and the U.S. Census American Community Survey was added to the EIS where available.

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61.	Brook	Brisson	Trustees for Alaska	98270	202	Public Health and Safety	Similarly, the NSB has different healthcare delivery systems than communities outside of the borough. Additional data, from communities on the southside of the Brooks Range should be compiled, analyzed, and incorporated into this document. Sources of this data could be the Tanana Chiefs Council (TCC), the Council of Athabascan Tribal Governments (CATG), and or the Alaska Native Tribal Health Consortium (ANTHC).	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
62.	Brook	Brisson	Trustees for Alaska	98270	203	Public Health and Safety	Finally, we note that where BLM cites findings and data for Nuiqsut, the agency is citing findings from previous EIS's. BLM makes comparisons between communities but does not cite any data or peer-reviewed studies for Nuiqsut to support its claims. This is not a scientifically sound approach to BLM's public health analysis.	Additional studies were incorporated in the EIS for the Nuiqsut area to support the analysis including the ANTHC 2011 and 2014 documents.

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63.	Brook	Brisson	Trustees for Alaska	98270	204	Public Health and Safety	BLM's analysis of public health impacts is too limited in geographic scope and inconsistent with other, related elements of the DEIS. In our scoping comments we discussed how impacts to health should include all communities that are connected to the Coastal Plain through ecological and social systems. We specifically named Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and the Canadian communities of Old Crow and Fort McPherson. Without a regional approach, BLM's analysis is flawed and incomplete. BLM's sole focus on one North Slope community and the use of NSB data is incorrect and should be expanded to include all communities that have a (social and ecological) connection to the Coastal Plain. BLM acknowledges the connections between human health and subsistence, and BLM acknowledges how 22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities change caribou resource availability or abundance for those users.2056 BLM goes on to write that "an overall reduction in the PCH could also affect harvest success among Inupiaq, the Gwich'in people, and Inuvialuit caribou hunters."2057 BLM's focus on only one North Slope community fundamentally fails to meaningfully analyze how other communities could have their health impacted by the leasing program. Because of the leasing program's connections to resources and these resources connections to health, BLM must comprehensively analyze how potential changes to subsistence resource availability and harvest will impact regional residents' health in both Alaska and Canada.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.

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64.	Brook	Brisson	Trustees for Alaska	98270	205	Public Health and Safety	BLM's geographic scope also fails to consider impacts from transportation. For instance, BLM does discuss impacts spanning to Dutch Harbor, despite the EIS asserting impacts would be considered for such shipping routes. BLM entirely fails to discuss impacts to subsistence whaling which may affect communities along the coast as a result of increased shipping. Additional health impacts should be considered for increased air pollution along shipping routes which could negatively affect coastal communities. BLM should also fully consider health impacts to the community of Dutch Harbor as a result of increased shipping activity taking place there. BLM also fails to consider the health impacts of increased traffic on the Dalton Highway, including impacts to the community of Bettles, which would likely result from oil and gas leasing and development on the Coastal Plain. Increased air pollution, as well as increased likelihood of accidents and injuries along the highway are important health considerations which are completely unaddressed in the DEIS.	Due to the minimal level of impacts that would be expected in Dutch Harbor as a result of increased shipping, an extensive health impact assessment is not warranted. Bettles is not along the Dalton Highway, thus, transportation impacts associated with the Coastal Plain program are expected to be minimal. The Draft EIS states that a HIA will be conducted when specific development projects are proposed and the BLM conducts a NEPA analysis of the proposed project and its impacts.

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65.	Brook	Brisson	Trustees for Alaska	98270	206	Public Health and Safety	BLM also arbitrarily and improperly limits the scope of its NEPA analysis by failing to consider impacts from all phases of oil and gas activities. BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.2058 BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to public health that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. As discussed elsewhere, BLM is currently in the process of reviewing an extensive seismic proposal from SAExploration that could cause lasting damage to tundra, vegetation, water quality, fish, wildlife, and other resources. That damage can in turn significantly harm human health. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. BLM needs to revise and reissue its EIS to ensure it actually takes into consideration the full range of potential impacts to public health.	Analysis of all phases of oil and gas development was added to the EIS including seismic exploration.

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66.	Brook	Brisson	Trustees for Alaska	98270	207	Public Health and Safety	Ambiguity of how positive and negative impacts are quantified presents challenges in understanding BLM's analysis of public health. The DEIS makes the assumption that oil development will lead to a better delivery of health services but there is nothing to support this premise described within the document. Relatedly, health services do not necessarily mean a healthier population and better health outcomes. Increased funding for health and social programs could potentially be enabled by oil revenue, but BLM fails to consider how these increases in funding would compare to potential increases in negative health outcomes and health care costs caused by an oil and gas leasing program.2059	This is a leasing-level analysis of potential effects of future oil and gas development. It includes general analysis of potential impacts to public health and safety, but does not include project specific details and remains a qualitative discussion of potential impacts.
67.	Brook	Brisson	Trustees for Alaska	98270	208	Public Health and Safety	Moreover, BLM also fails to consider that not all communities that could be impacted by the Coastal Plain oil and gas leasing program will benefit from revenue derived from development activities. Communities south of the Brooks Range, who are outside of the NSB, will receive no revenue from royalties or the taxation of infrastructure. These communities' ecological, social, economic, and cultural systems may be impacted while receiving none of the monetary benefits of development. These inequities and disparities must be considered by BLM in their analysis.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
68.	Brook	Brisson	Trustees for Alaska	98270	209	Public Health and Safety	BLM's discussion on air quality issues in rural Alaska villages mentions "indoor air quality" alongside sources of pollution like diesel emissions. What BLM specifically means by "indoor air quality" should be articulated in greater detail as this phrase does not articulate a clear harm.	Following text was added to indoor air quality section to clarify the meaning of the term: "Arctic residents are particularly vulnerable to indoor air pollution due to tightly sealed houses and poor ventilation, as well as prolonged time spent indoors."

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69.	Brook	Brisson	Trustees for Alaska	98270	210	Public Health and Safety	BLM's scope of analysis for exposure to hazardous materials is too narrow and solely considers residents of the NSB. Risks from exposure to hazardous materials in other communities should also be considered within this analysis.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
70.	Brook	Brisson	Trustees for Alaska	98270	211	Public Health and Safety	Mental health impacts are not discussed at all in the DEIS, despite the fact they are already occurring due to stress related to this leasing process (fear of environmental contamination, food security, cultural change, acculturative stress). BLM's analysis entirely fails to capture how this leasing program will impact regional resident's mental health. Within the subsistence uses and resources section, BLM cites the FWS and writes that the program area is considered sacred ground to the Gwich'in.2060 BLM goes on to say within this section that "caribou are a resource of primary subsistence, economic, cultural, and spiritual importance for the community of Arctic Village."2061 The stress and mental anguish associated with the potential loss of irreplaceable and culturally important lands must be analyzed when considering the mental health impacts of a Coastal Plain leasing program for Gwich'in communities and all regional residents who have a spiritual connection these lands.	Text was added to the Social Determinants of Health section that analyzed the mental health impacts of potential development on Kaktovik residents. Gwich'in villages and Arctic Village were added to the Diet and Nutrition analysis including food security and social network analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Brook	Brisson	Trustees for Alaska	98270	212	Public Health and Safety	BLM briefly acknowledges that "food security can be a source of stress in NSB households, particularly Iñupiat households."2062 The connection between the leasing program and mental health challenges associated with food insecurity should be considered. This analysis should extend beyond the NSB and include all communities connected to the Coastal Plain's subsistence resources. As the Executive Director of the Gwich'in Steering Committee has repeatedly explained, protecting the Porcupine Caribou Herd is an issue of food security for the Gwich'in.2063 Relatedly, BLM should analyze how concerns (perceived and/or real) around the safety of subsistence resources could impact mental health.	Social Determinants of Health added to the EIS to explore impacts to mental health associated with food insecurity. The Diet and Nutrition section of Impacts Common to all Action Alternatives includes analysis of food insecurity for Kaktovik residents and Gwich'in tribes.
72.	Brook	Brisson	Trustees for Alaska	98270	213	Public Health and Safety	Finally, BLM fails to mention how this planning process and all subsequent planning and permitting processes on the Coastal Plain will impact the mental health of Inupiaq, Gwich'in, and Inuvialuit peoples. The direct mental health impacts of this DEIS should be considered and described in detail.	Gwich'in and Inuvialuit villages, Venetie, and Arctic Village were added to the Diet and Nutrition portions of the Affected Environment, Direct and Indirect Impacts, and Cumulative Impacts Sections of the EIS. In addition, a Transboundary section was included in the Direct and Indirect Impacts section that includes potential impacts to Canadian communities from the leasing actions.
73.	Brook	Brisson	Trustees for Alaska	98270	215	Public Health and Safety	While BLM acknowledges how subsistence resources and practices create social cohesion and networks of sharing and cooperation across the region, BLM fails to consider how these elements of connection contribute positively to the health and wellness of regional residents. A significant body of science exists around the public health benefits of social networks, and these benefits should be described within the document.2064 Specifically, the health benefits of social networks created and enabled by subsistence resources and practices should be quantified and included within BLM's analysis.	An analysis of social networks related to subsistence practices was added to the Diet and Nutrition section of Impacts Common to all Action Alternatives and the Affected Environment.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Brook	Brisson	Trustees for Alaska	98270	216	Public Health and Safety	The health impacts of compromised social networks because of changed or reduced subsistence resources or practices should also be considered. BLM states that "reductions in the success of subsistence harvests for Kaktovik residents would accelerate the transition from subsistence resources to store-bought foods, worsening nutritional outcomes and food security."2065 Disruptions from oil development to ecological and social systems, relating specifically to cooperation and sharing, may similarly cause a transition from subsistence resources to store-bought foods for people throughout the region. This type of secondary outcome should be considered by BLM.	An analysis of social networks related to subsistence practices was be added to the Diet and Nutrition section of Impacts Common to all Action Alternatives and the Affected Environment.
75.	Brook	Brisson	Trustees for Alaska	98270	217	Public Health and Safety	As we discussed in our scoping comments, BLM must analyze how a Coastal Plain leasing program will impact all three pillars of food security: food availability, food access, and food use.2066 Potential impacts on food security should be quantified and described in greater detail. Within the subsistence uses and resources section, BLM states that a total loss of caribou harvest for Venetie would represent a 31 percent decline in subsistence foods for the community.2067 Potential impacts with food security include fear of contamination of subsistence food, decreased ability to access adequate subsistence resources, and a lack of recognition of the limitations of a subsistence-cash economies in many of these communities. BLM should analyze how impacts to subsistence resources will comprehensively impact communities' health and wellness.2068	The Diet and Nutrition section of Impacts Common to all Action Alternatives includes discussion of food security, fear of contamination, and decreased ability to access subsistence resources and the potential impacts to Venetie residents.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
76.	Brook	Brisson	Trustees for Alaska	98270	218	Public Health and Safety	BLM fails to consider how oil development in the program area will affect subsistence resource movements, alter hunting patterns, and present safety risks for all regional residents, north and south of the Brooks Range.2069 Again, and as mentioned before, the scope of this analysis is too narrow. A Coastal Plain leasing program has the potential to alter how and when communities from across the region access the PCH and other subsistence resources, and this will likely create new dangers on the landscape and increase the risk of injury. This is particularly true for the community of Kaktovik, which is most likely to be located in an area of close proximity to gravel roads, pipelines, and other infrastructure. Relatedly, BLM writes that there could be "slight increase in accidents due to changes in subsistence hunting patterns."2070 BLM should cite the source that formally estimates that changed subsistence hunting patterns will lead to increases in public health services and describe how it was calculated.	The Diet and Nutrition section of Impacts Common to all Action Alternatives includes discussion of food security, fear of contamination, and decreased ability to access subsistence resources and the potential impacts to Kaktovik, Venetie, and Arctic Village residents.

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77.	Brook	Brisson	Trustees for Alaska	98270	219	Public Health and Safety	BLM assumes that a Coastal Plain leasing program will result in a low likelihood of subsistence food contamination because there have been low measurable contamination impacts to food sources to date, despite high levels of oil and gas activities on the North Slope. ²⁰⁷¹ This statement does not account for where oil development has historically occurred or the fact that only one community, Nuiqsut, has been directly impacted by oil and gas activities in their core subsistence use areas and that the true impacts of existing and future oil development have not yet been fully felt or understood. The absence of a particular outcome in the past, particularly when not analogous in context, is not a sound rationale to justify the potential for no future impacts. BLM writes that "except for a major spill, there are likely to be only negligible health effects from contamination of food sources as a result of the action alternatives." ²⁰⁷² BLM should articulate what these presumed "negligible health effects" may be and describe their sources and any potential mitigation measures.	ROP 7 would "Ensure that permitted activities do not create human health risks by contaminating subsistence foods." This ROP would identify any potential food contamination and mitigate the impacts.
78.	Brook	Brisson	Trustees for Alaska	98270	221	Public Health and Safety	Finally, BLM fails to describe how climate change impacts will potentially be compounded by the impacts of an oil and gas leasing program. These cumulative impacts must be quantified to fully consider potential health conditions within the region.	The EIS includes a general discussion of climate change impacts on public health and safety issues for Kaktovik residents.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	Brook	Brisson	Trustees for Alaska	98270	222	Public Health and Safety	BLM does not consider health impacts from infectious or communicable disease or as a result of an influx of non-local workers associated with oil and gas activities. This important health determinant is unacknowledged in the DEIS despite extensive research and studies on the topic,2075 and its recognition as an important issue by the North Slope Borough. In its Health Indicators Report, the NSB described chlamydia and gonorrhea as the two most common sexually transmitted diseases in relation to North American resource development, and also discussed the importance of considering the spread of communicable diseases like infectious diarrheal illnesses and tuberculosis.2076 BLM failed to discuss these important health indicators and potential impacts from oil and gas activities.	An Infectious Disease section was added to the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Brook	Brisson	Trustees for Alaska	98270	223	Public Health and Safety	BLM failed to conduct a meaningful analysis of mitigation measures to avoid and minimize impacts to public health. Had BLM developed an HIA for the Lease DEIS, such mitigation would have been considered in a meaningful and transparent process. The standard in Alaska is for HIA's to include potential prevention and mitigation measures that address public health impacts for ultimate agency consideration. ²⁰⁷⁷ The HIA for the 2007-2012 Outer Continental Shelf Oil and Gas Leasing Program, for example, presented nine alternative plans to the proposed action that were included in the EIS report, and as a result the U.S. Minerals Management Service committed to develop new health-related mitigation measures at the lease sale stage. ²⁰⁷⁸ Past examples of HIA recommended mitigation measures include the establishment of a health advisory board, public health monitoring, contaminant monitoring and mitigation measures for reducing exposure, subsistence intake studies, public safety plan, employee education, and an independent oil spill review board. BLM must conduct an HIA for leasing on the Coastal Plain to inform the health-related mitigation measures it eventually considers. An HIA is a necessary prerequisite.	The Draft EIS includes ROPs designed to mitigate impacts of potential development on Kaktovik residents and subsistence harvesting including contamination of wildlife and consultation with subsistence harvesters prior to development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Brook	Brisson	Trustees for Alaska	98270	226	Public Health and Safety	Equally damning is the inherent vulnerability of Refuge oil to sabotage or other disruption. As former Central Intelligence Director James Woolsey testified to Congress, in 2001 when the United States was genuinely dependent on imported oil, "I have always been . . . tolerant of having oil wells around. [T]he problem with ANWR . . . is the Trans-Alaska Pipeline, which is . . . easily interfered with and easily disrupted."2084 A year later, he wrote that the pipeline "is frightening insecure" and that drilling in the Refuge would make it "the fattest energy-terrorist target in the country."2085 A more recent analysis of pipeline security points out that even under normal operating conditions "pipelines more than forty years old are much more likely to rupture or leak" (the Trans-Alaska Pipeline is 42) and "[w]hile there have been no major incidents involving a domestic cyberattack on the pipeline infrastructure, the risks are increasing exponentially."2086 The revised EIS must candidly acknowledge this intrinsic insecurity of oil produced from the Refuge and contrast it with the energy security achievable through safer and cleaner energy, non-fossil fuel alternatives.2087	TAPS has operated reliably since its inception.

S.3.28 Public Outreach

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Beth	Davidow	—	28080	3	Public Outreach	Work on scheduling hearings is reportedly continuing at the BLM despite the government shutdown. This is happening at a time when key officials, such as Nancy Hayes, who is the project manager and contact person for BLM have email response messages that say they are “not authorized to work during this time.” The public has no way to get ahold of BLM officials by phone, email or in person, to have questions about the DEIS answered, meeting times and formats clarified, or to request hard copies of the DEIS or translated versions. At the very least, the public comment period should be extended to account for these several weeks of inability to contact officials.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony. The public comment period for the Draft EIS was extended 30 days, for a total of 75 days.
2.	Tonya	Garnett	Native Village of Ventie Tribal Gov.	30689	2	Public Outreach	The Tribes appreciate BLM's willingness to fund translation of the dEIS into written Gwich'in. However, as the agency is well aware, translation of this complex and technical document will take considerable time. At the outset, the 45-day public comment period is inadequate to allow for translation of the dEIS.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis.

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3.	Robert	Burgess	—	55298	2	Public Outreach	The DEIS and the comments to it must be translated into Inupiaq and Gwich'in, and the comments and testimonies made in indigenous languages should be translated to English, so that everyone has an equal opportunity to listen and be heard.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
4.	JOSEPH	Kohn MD	We Are One, Inc. - WAO	57795	2	Public Outreach	Translation in Gwichin and Inupiaq is necessary. The EIS and all related documents should be understandable to ALL, especially those most impacted. All meetings should also have translators present. Extend the commenting period 120 days, Alaskans and the rest of the country do not have adequate time to comment. More public hearings are necessary. The Arctic Refuge is a national treasure, all U.S. citizens should have the opportunity to give public comments.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
5.	Charlotte	Basham	—	58396	1	Public Outreach	Materials should be translated into Gwich'in and Inupiaq so that elders can fully understand what is being proposed. Also, translators should be available at the hearings so those elders can speak in their own language.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

S. Public Comments and BLM Responses (Public Outreach)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Peter	Stern	—	69296	12	Public Outreach	Page I-7 section 1.11 The amount of time allotted for translation to allow for enough understanding of this highly complex and very hard to read document is absurdly short. Hearings in affected villages were scheduled far in advance of any translations being available to native people.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
7.	Peter	Stern	—	69296	88	Public Outreach	BLM must provide funding for translation of EIS project documents (waivers, exploration, development and production) permitting into the native languages and provide enough time to get that done prior to scheduling public hearings in villages.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
8.	Withheld	Withheld	—	70934	3	Public Outreach	Translations of the DEIS into Gwich'in have not been readily available nor have translators been readily available at meeting.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

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9.	Rosa	Brown	Vuntut Gwitchin Government	74326	7	Public Outreach	Lastly, the format and delivery of the draft EIS presents a further barrier to effective inclusion of the Vuntut Gwitchin First Nation in the EIS process. A plain language summary, by which the proposed actions and alternatives can be readily understood by Elders, Vuntut Gwitchin First Nation citizens and the public, was not made available. The maps included in the draft EIS are misrepresentative because they do not include the entire range of the Porcupine caribou herd, the Arctic Refuge and other protected areas, or Old Crow and other Gwich'in communities. The Bureau of Land Management did not provide Gwich'in translation for any of the BLM scoping or draft EIS documents.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
10.	Rosa	Brown	Vuntut Gwitchin Government	74326	25	Public Outreach	The Vuntut Gwitchin Government formally requests the Bureau of Land Management re-open the public comment period on the draft EIS, and that public meetings are held in the Vuntut Gwitchin First Nation community of Old Crow, Yukon, and other Canadian communities to discuss the Coastal Plain oil and gas leasing program draft EIS. The Vuntut Gwitchin Government formally requests that Bureau of Land Management hold a public subsistence hearing per ANILCA Section 810 in Old Crow, Yukon, and meets consultation requirements with the Vuntut Gwitchin First Nation. The Vuntut Gwitchin Government formally requests an extension of 60 days to comment on the draft EIS, to provide time for meetings and hearings to occur in Old Crow and Canada, and provide any additional comments the Vuntut Gwitchin First Nation may further identify as a result. And on release of a revised EIS, the Vuntut Gwitchin Government formally requests public meetings and hearings in Old Crow, Yukon and other Canadians communities.	The public comment period on the Draft EIS was extended 30 days. The hearing requirement under Section 810(a) of ANILCA only applies where subsistence uses of rural Alaska residents would be significantly restricted.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Withheld	Withheld	—	75137	1	Public Outreach	Public participation - A thorough analysis requires participation of all affected parties. BLM has not consulted with all of the Gwich'in tribes (as required by law). The BLM must allow all community members to have a voice in this process.	Appendix C lists government-to-government consultations conducted by DOI/BLM. DOI has also conducted consultation with the IPCB and with Canadian officials.
12.	Withheld	Withheld	—	75601	2	Public Outreach	To make the EIS available and accessible to all local communities, the draft and final documents should be translated into Gwich'in and Inupiaq and multiple public meetings should be held and have translators present. Paper copies of the documents should also be made available at multiple accessible locations.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
13.	Withheld	Withheld	—	79648	3	Public Outreach	Finally, the BLM's failure to translate the DEIS into the Native languages of the tribal peoples living in the region, including Inupiaq or Gwich'in, means that important stakeholders, such as tribal elders and traditional language speakers, are unable to understand the materials provided and options available for them to comment, contribute valuable local knowledge, or make decisions about how to meaningfully engage with this process.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

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14.	Deana	Lemke	Porcupine Caribou Management Board	80214	38	Public Outreach	Meetings have only occurred in Alaskan communities. Any future hearings that are alluded to are only in reference to Alaskan communities (e.g., Arctic Village, Venetie). Potential impact on Canadian users is not acknowledged or assessed to any real extent. Participation of Canadian users in meetings or consultations is not mentioned.	Per the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, the BLM disclosed the impacts of the action on the PCH, its habitat, and the affected users of Porcupine Caribou. There are no requirements in the Agreement related to public meetings. All information is readily available on the internet and open to public input from all users.
15.	Deana	Lemke	Porcupine Caribou Management Board	80214	39	Public Outreach	Meetings should be held in PCH user communities in Canada to consider how subsistence harvesters may be adversely affected. Enable users of Porcupine Caribou to participate in the international co-ordination of the conservation of the Porcupine Caribou Herd and its habitat; Encourage cooperation and communication among governments, users of Porcupine Caribou and others	Per the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, the BLM disclosed the impacts of the action on the PCH, its habitat, and the affected users of Porcupine Caribou. There are no requirements in the Agreement related to public meetings. All information is readily available on the internet and open to public input from all users.

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16.	Withheld	Withheld	—	80226	1	Public Outreach	Additionally, the accelerated timeline of preparing the draft EIS and scheduling public meetings concerns me. The EIS studied the effects of lease sales on subsistence resources for 22 villages and 7 Canadian user groups, selected based on proximity and impact. Yet, public meetings are being held in only five of these communities (Kaktovik, Utqiagvik, Fort Yukon, Arctic Village, and Venetie). Many rural Alaskans, those who will be most impacted by the proposed lease sales, are unable to attend the limited EIS meetings. With 85% of the Porcupine Caribou harvest occurring in Canada, why is there no effort to solicit input from Canadian villages, tribal governments, or individuals? The EIS should be translated into Inupiaq and Gwich'in, and public meetings held in each impacted community.	Per the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the PCH, the BLM disclosed the impacts of the action on the PCH, its habitat, and the affected users of Porcupine Caribou. There are no requirements in the Agreement related to public meetings. All information is readily available on the internet and open to public input from all users. Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Jessica	Thornton	—	81390	1	Public Outreach	I demand that there are true consultations with all Tribes that will be impacted, and that there are hard copy translations made of the EIS into both Inupiaq and Gwich'in. We are talking about the future of an entire people, an entire culture, and you couldn't even show the respect to provide translations, or provide translators during all of the hearings so that people could testify in their own languages. That is truly shameful.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony. In addition to public meetings, the DOI/BLM have conducted Native consultation with all substantially affected communities, in accordance with the DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials.

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18.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	1	Public Outreach	The Tribes appreciate BLM's willingness to fund the translation of the DEIS into written Gwich'in. However, the BLM's efforts did not satisfy its own promises to facilitate the translation or its trust responsibility to the Tribes. Though the BLM continued to work on the DEIS during the partial government shutdown, it did not provide the promised funding for translation.⁵ Because of the delay in funding, the Tribes were unable to translate the entire DEIS, and the translation of selected sections of the DEIS was not available until March 10, 2018—three days before the DEIS comment deadline. During the shutdown, the Tribes requested that the BLM extend the comment period to provide sufficient time to produce an accurate and understandable translation. The Tribes also informed the BLM that not extending the comment period to provide sufficient time for translation would severely hinder the participation of tribal members and other Gwich'in people who speak Gwich'in as their first, and often only language. The BLM ignored the Tribes' requests. The BLM's decision to continue to work on the DEIS during the government shutdown—but to not provide timely funding for translators or additional time for translation—disenfranchised tribal members and other Gwich'in people from the public comment process. Funding the translation efforts while simultaneously not providing adequate time to translate the DEIS is merely paying lip service to BLM's trust responsibility to the Tribes.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

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19.	Matt	Krogh	Stand.earth	83321	14	Public Outreach	BLM also ignored requests for additional hearings in Canada, such as in Fort McPherson and Aklavik. As the DEIS acknowledges, First Nations in Canada comprise a majority of subsistence users dependent on Porcupine caribou. BLM should respect the interdependent nature of the fate of the Gwich'in and caribou by granting villages in Canada a venue to voice their opinions and facts.	In addition to public meetings, DOI/BLM have conducted Native consultation with all substantially affected communities, in accordance with DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
20.	Withheld	Withheld	Government of the Northwest Territories	92862	7	Public Outreach	The draft EIS does not describe how issues identified during scoping regarding impacts to Canadian Indigenous peoples cultural, subsistence, and social relationships with the Porcupine Caribou herd were considered and addressed in the draft EIS.	Per the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the PCH, the BLM disclosed the impacts of the action on the PCH, its habitat, and the affected users of Porcupine Caribou. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
21.	Withheld	Withheld	Government of the Northwest Territories	92862	8	Public Outreach	The GNWT recommends that BLM describe how the issues and potential impacts identified during scoping have been analyzed, what determinations have been made as a result of this analysis, and how this has been included in the draft EIS and alternatives.	Per the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the PCH, the BLM disclosed the impacts of the action on the PCH, its habitat, and the affected users of Porcupine Caribou. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
22.	Withheld	Withheld	Government of the Northwest Territories	92862	9	Public Outreach	The GNWT recommends that the BLM describe how it has met the requirements under section. 1005 of the Alaska National Interest Lands Conservation Act (ANILCA), specifically, if and how BLM has consulted with the Gwich'in Tribal Council, the Inuvialuit Regional Corporation, the Inuvialuit Game Council and the GNWT, and how they have incorporated this information in their analysis in the draft EIS.	The study requirements of Section 1005 of ANILCA expired in 1987 with the submittal to Congress of the report required by Section 1002(h). The DOI/BLM have conducted Native consultation with all substantially affected communities, in accordance with DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	1	Public Outreach	Despite our early and repeated requests for translation of these materials, BLM provided some resources for the Arctic Village Council to undertake translation which was completed on March 10, 2019 - a mere three days before the close of the public comment period. Moreover, only a portion of the EIS was translated into Gwich'in, such as the sections on cultural resources, subsistence uses and resources, and ANILCA 810. Critically, we do not have a translated version of the analysis of impacts to caribou, public health, birds, sociocultural systems, or climate change, which are vitally important to our communities. While we appreciate that BLM provided such resources, translated materials were necessary during the entirety of comment period to allow for meaningful review and comment. We also requested that translators be available to assist with questions and comments at all public events and meetings. It is gravely concerning that BLM apparently failed to translate many important scoping comments from Gwich'in into English so that they could be incorporated into the agency's analysis. ² BLM thus ignored important input from affected communities during scoping, and has made continued participation by these communities and our members exceedingly difficult. ² See e.g., Transcript from Venetie scoping meeting, at 19-20 (Jun. 12, 2018)	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Ted	Heuer	—	97531	4	Public Outreach	Just a couple of other comments, the "Project Search" box on your website was not working for me, which made it extremely difficult find specific issues I was interested in reading about. The U.S. Fish and Wildlife Service is the federal agency with the management responsibility for our national wildlife refuges. The Fish and Wildlife Service has managed and studied the wildlife and habitats of the Arctic National Wildlife Refuge for decades. "Appendix C. Collaboration and Coordination" does not identify any Fish and Wildlife Service employees associated with the EIS interdisciplinary team, surely that cannot be right?	The USFWS is a Cooperating Agency and assisted the BLM in developing alternatives, lease stipulations and ROPs, providing data, and reviewing and providing input on the EIS. Additional language regarding roles and responsibilities has been added to section 1.4.
25.	Krista	Holbrook	—	97872	1	Public Outreach	I found that translations of the DEIS is not available in their native language. They are being denied the right to understand and comment upon the critical legislation. They do not have necessary information that would allow them to make clear concise evaluation.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

S. Public Comments and BLM Responses (Public Outreach)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Margi	Dashevsky	—	98093	2	Public Outreach	Therefore, the BLM should create a supplemental Environmental Impact Statement and translate it into Inupiaq and Gwich'in	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.
27.	Brook	Brisson	Trustees for Alaska	98269	6	Public Outreach	Groups' also supported requests by the Gwich'in Steering Committee to translate all EIS documents into Gwich'in, so that affected communities could engage in this process. Though BLM provided some resources for the Arctic Village Council to undertake translation which was completed on March 10, 2019 - a mere three days before the close of the public comment period. Moreover, only a portion of the EIS was translated into Gwich'in, such as the sections on cultural resources, subsistence uses and resources, and ANILCA 810, while the vast majority of the document remains in English only. While we appreciate that BLM responded to requests to provide such resources, translated materials were necessary during the entirety of comment period to allow for meaningful review and comment.	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Brook	Brisson	Trustees for Alaska	98269	51	Public Outreach	The Canadian governments requested that the BLM conduct public hearings in Canadian communities such as Whitehorse, Old Crow, Inuvik, Fort McPherson, and Aklavik. ...Unfortunately, the BLM opted to ignore the opportunity to obtain this potentially valuable community-level information during the scoping stage. The BLM has also failed to hold any public meetings in Canada during the public comment period on the DEIS. The BLM cannot continue to disregard Canadian input about transboundary impacts. To help correct this unacceptable problem, the BLM should re-open the public comment period on the DEIS and work with the Canadian governments to organize public meetings in all affected Canadian communities. Additional meetings in Canada should be held when the BLM revises the DEIS to consider the Yukon government's scientific study and the International Porcupine Caribou Board's recommendations.	In addition to public meetings, the DOI/BLM have conducted Native consultation with all substantially affected communities, in accordance with DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
29.	Brook	Brisson	Trustees for Alaska	98270	99	Public Outreach	Finally, BLM has failed to meaningfully engage communities in this EIS process, worsening the environmental justice implications of its proposed leasing program. Despite recognizing that "Federal agencies also are required to give affected communities opportunities to provide input into the environmental review process, including the identification of mitigation measures,"1761 BLM has repeatedly failed to engage affected communities.1762 BLM's timeframes for review of the draft EIS are insufficient to allow for meaningful public involvement. Ensuring that the public has sufficient time to receive and review all of the documents and understand their relationship to what is being proposed is essential to the public's ability to analyze and provide meaningful comments to the agency on the project.	In addition to public meetings, theDOI/BLM have conducted Native consultation with all substantially affected communities, in accordance with DOI's Tribal and ANCSA Corporation consultation policies. The EIS gives due consideration to the IPCA, and the DOI has conducted consultation with the IPCB and with Canadian officials. The public comment period for the Draft EIS was extended 30 days, for a total of 75 days.

S.3.29 Purpose and Need

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	72125	15	Purpose and Need	The BLM Leasing EIS Purpose and Need statement does not reflect the need to address the collective purposes of the Arctic Refuge Coastal Plain. The BLM's overly restrictive purpose and need statement has narrowed the range of alternatives in the DEIS and may circumvent the NEPA requirements in future alternatives analyses.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to section 1.2.
2.	Renae	Smith	Counsel for Environmental Protection	74336	1	Purpose and Need	BLM's sparse statement is insufficient because it arbitrarily fails to address the revenue generation purpose of Congress's lease program directive. The Congressional Budget Office (CBO) report accompanying the legislative proposal enacted as the Tax Cuts and Jobs Act estimated-erroneously-that the anticipated gross proceeds from the proposed Leasing Program would generate \$2.2 billion in revenue over ten years, with half of that amount directed to the State of Alaska and the other half to the federal government. ³⁶ A critical aspect of Congress's purpose in establishing the Leasing Program, therefore, is to offset the tax revenue loss resulting from passage of the Tax Cuts and Jobs Act. ³⁷ But BLM does not mention that purpose or otherwise make an effort to evaluate the extent to which any action alternative would generate the amount of revenue intended by Congress.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Renae	Smith	Counsel for Environmental Protection	74336	1	Purpose and Need	Given the significant, irreparable environmental harms that will result from oil and gas development in the Coastal Plain, BLM should fairly evaluate, consider, and present to the public both the benefits and the harms of the planned action, including the likelihood that the Leasing Program will not yield the economic results desired by Congress. ³⁹ Only with this information will BLM "have a meaningful opportunity to weigh the benefits of the project versus the detrimental effects on the environment." ⁴⁰	The EIS has been revised to provide additional discussion on potential beneficial impacts in the environmental consequences section under economic sectors.
4.	Renae	Smith	Counsel for Environmental Protection	74336	2	Purpose and Need	BLM also fails to mention or address other Congressional directives in its management of public lands to ensure a careful balance between resource extraction and environmental protection. ³⁸	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to section 1.2. Appendix D describes applicable laws.
5.	Renae	Smith	Counsel for Environmental Protection	74336	3	Purpose and Need	BLM's unreasonably narrow purpose and need statement-by virtue of its failure to consider the revenue generation purpose of the Leasing Program- improperly frames and limits the Agency's alternatives analysis.	The Tax Act does not direct the Secretary to generate any particular amount of revenue from oil and gas leasing in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	DJ	Schubert	Animal Welfare Institute	75588	5	Purpose and Need	BLM has not adequately explained how leasing massive areas with low carbon potential meets the purpose and need articulated in the DEIS.	All action alternatives meet the purpose and need because they all provide for implementation of an oil and gas program in the Coastal Plain that is consistent with the requirements of PL 115-97 while balancing the protection of surface resources and accounting for all purposes of the Refuge. Under each action alternative at least 800,000 acres of land is available for lease, including those areas that have the highest hydrocarbon potential. Because there are only an estimated 427,000 acres of high HCP, in order to provide the minimum 800,000 acres of land required for the first two mandated lease sales (i.e., 400,000 acres for each sale) other areas, having lower HCP, also need to be included in the lease sales in order to meet the minimum acreage requirements of PL 115-97.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	2	Purpose and Need	The Purpose and Need statement must support the eventual development, production, and transportation of oil and gas. The DEIS's Purpose and Need statement properly characterizes the Tax Act as requiring the Secretary of the Interior, acting through BLM, to "establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain."33 The Purpose and Need statement goes on to explain that the FEIS will inform BLM's implementation of subsection (c)(1) of the statute-i.e., "the requirement to hold multiple lease sales."34 However, the FEIS must also inform and support the broader congressional mandate to not only hold lease sales, but to "establish" a program for the "development, production, and transportation" of oil and gas on the Coastal Plain.35 31 Id. § 20001(c). 32 Id. § 20001(b)(3). 33 DEIS at 1-1. 34 Id. at 1-2. 35 Pub. L. No. 115-97, § 20001(b)(2)(A). Ms. Nicole Hayes March 13, 2019 Page 13 of 36 13 99959215.12 0078439-00052 The Purpose and Need statement should be clear that leases or lease stipulations that would not allow for exploration and the eventual development, production, and transportation of oil and gas in and from the Coastal Plain will not meet the Tax Act's requirements. The Associations request that the FEIS include a revised Purpose and Need statement reflecting not only BLM's obligation to hold multiple lease sales, but also that such lease sales must be conducted in a manner that will allow for the development, production, and transportation of oil and gas in and from the Coastal Plain, as directed by Congress.	The purpose and need (Section 1.2) states that the BLM is developing the EIS to implement the leasing program consistent with the Tax Act, including the need to provide lease stipulations and ROPS that properly balance oil and gas development with protection of surface resources. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to section 1.2.

S.3.30 Reasonably Foreseeable Development (RFD)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	41048	5	Reasonably Foreseeable Development (RFD)	The draft EIS also makes statements and assumptions in Appendix B concerning the price of oil in the future that have no basis in reality. Oil prices are currently dropping and there is a worldwide glut of oil. The claim in Appendix B-1 "that crude oil prices will continue to rise in the next 20 years" is fantastical, all trends indicate that the demand for oil will continue to drop (along with its price) due to the rising use of other types of energy and changing technologies.	Oil price estimates were created by the Energy Information Administration. See Crude projections here https://www.eia.gov/outlooks/aeo/data/browser/#/?id=12-AEO2019&cases=ref2019&sourcekey=0 .
2.	Withheld	Withheld	—	55252	10	Reasonably Foreseeable Development (RFD)	the DEIS just projects a 50-year life for the production facilities. The production facilities at Prudhoe Bay are going strong and will certainly exceed 50 years. There is not a reasonable basis to limit the production life of the facilities on the North Slope, including the Coastal Plain of the Arctic National Wildlife Refuge, to 50 years.	The Draft EIS limits analysis to 50 years because there are too many variables to predict past that point. The overall hypothetical development scenario for the overall program extends beyond 50 years.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Withheld	Withheld	—	56788	3	Reasonably Foreseeable Development (RFD)	I believe that the oil and gas potential of the Coastal Plain has been vastly over-estimated by the US Geological Survey, and their analysis is based on overly-optimistic and flawed assumptions. In particular, it is my opinion that key North Slope reservoir and source rock units are missing (eroded) in much of the subsurface of the ANWR Coastal Plain, and that most of the traps formed too late to capture much of the oil, if ever generated. I think that exploration will result in the discovery of mostly gas, which will have to await conversion of the Trans-Alaska Pipeline to gas and then “get in line” behind all the existing “stranded gas” on the North Slope (Prudhoe Bay, Kuparuk) before it will ever be monetized. Furthermore, the current glut of gas in the lower 48 states will hardly encourage development of ANWR gas for domestic consumption. Thus, the economic benefit of opening ANWR that is imagined by many will be not be realized.	This information is subjective and not supported by any data references. Future 3D seismic exploration and drilling would clarify the state of subsurface conditions before production would begin.
4.	Philip	Marshall	—	67580	3	Reasonably Foreseeable Development (RFD)	No where is dredging addressed to handle deeper-hulled craft nor varying seabed profiles.	Added to hypothetical development scenario that dredging (if required) will be analyzed in proposals that call for it.
5.	Withheld	Withheld	—	68965	76	Reasonably Foreseeable Development (RFD)	The Terrestrial Mammal analysis is also noteworthy because it includes consideration of some activities such as blasting at sand and gravel pit sites and installation of power lines (pg. 3-113). If these activities are reasonably foreseeable aspects of the proposed program, they should have been described in Appendix B and analyzed in sections that dealt with other resources, for example “Birds.” Please revise.	Blasting at sand and gravel sites has been added to the gravel mining discussion in the hypothetical development scenario. Power will run on VSMs with pipelines so overhead power lines will not be installed.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	—	68965	84	Reasonably Foreseeable Development (RFD)	56. Chapter 3; section 3.3.5, page 3-136. Marine Mammals. Pile driving is mentioned as a potential construction activity here and in Appendix F (pg. F-24), but is not described in Appendix B as a reasonably foreseeable activity. If pile driving is a reasonably foreseeable aspect of the proposed program, it should be described in Appendix B and its effects analyzed for other potentially impacted resources, for example "Fish and Aquatic Resources" and "Birds."	Pile driving has been added to the hypothetical development scenario as a reasonably foreseeable action.
7.	Peter	Stern	—	69296	69	Reasonably Foreseeable Development (RFD)	Appendix 2 B-13 is very ambiguous when it comes to sourcing water. This is further reference to water needs for ice roads and reinjection wells that doesn't do a very good job identifying good sources. Instead is lists possible sources with a poor understanding of how much water might be available in the various areas open for leasing.	Additional NEPA analysis at the project and site-specific level would assess water needs and measures to address water supply issues.
8.	Peter	Stern	—	69296	70	Reasonably Foreseeable Development (RFD)	B-16 acknowledges a lack of information about ground water so needs may not be met. This means sea water may have to be used. Pipelines may need to be built from the coast.	The hypothetical development scenario anticipates that a seawater treatment plant and pipelines from the coast would need to be constructed. It is discussed in Section B.7.3-Development.
9.	Linda	Serret	—	69357	6	Reasonably Foreseeable Development (RFD)	Could you integrate a bottom line assessment of the effectiveness of the proposed lease stipulations and operating procedures (qualitative or quantitative), based on past similar projects, to help reader understand whether any of these many measures would be effective?	All stipulations and operating procedures except for measures that are specific to the Coastal Plain (e.g., setbacks from a specific river) are measures that have been used successfully at other North Slope locations. If best management practices change based on new information, operating procedures would change to reflect that. If requirements are determined to be ineffective the BLM can adjust them.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Jill	Nogi	Environmental Protection Agency	71634	27	Reasonably Foreseeable Development (RFD)	The discussion of the Reasonably Foreseeable Development Scenario in Appendix B states that "Current drilling technology is self-contained, so there are no reserve pits that could leak or pose an attractive nuisance to wildlife ... Using grind and inject technology, cuttings are now crushed and slurried with seawater in a ball mill, then combined with the remaining drilling muds and reinjected into confining rock formation 3,000 to 4,000 feet underground in an approved injection well (DOI 2005). This reduces the environmental impacts of disposing of drill cuttings because it avoids the need to bury cuttings onsite or haul them to a landfill." The discussion is presented with regard to the potential impacts of exploratory well drilling. Given that oil and gas infrastructure does not currently exist in the program area, we recommend that the EIS provide additional detail regarding where these wastes are anticipated to be injected during the exploration phase. For example, we recommend identifying the existing permitted underground injection wells in nearby oil fields and discussing their capacity to accept the additional waste from future projects in the Coastal Plain. In addition, we recommend including information on and analysis of impacts from hauling these wastes to offsite injection sites.	During the exploration phase cuttings would be hauled out of the Refuge. During the development phase disposal wells would be drilled on well pads within the Coastal Plain so cuttings would not need to be moved offsite. At the development phase, enough would be known about the subsurface lithology for allowance (or not) of disposal wells. Disposal wells are regulated by ADEC. This information was added to the hypothetical development scenario.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Jill	Nogi	Environmental Protection Agency	71634	28	Reasonably Foreseeable Development (RFD)	We note that, with regard to field development, Appendix B only briefly references the anticipated future use of underground injection wells, stating, "The potential anchor pad is expected to have a Class I or Class II disposal well, or both, which are used to dispose of industrial wastes and fluids associated with oil and gas production, respectively." The DEIS also briefly mentions injection wells in Section 3.2.11, Solid and Hazardous Waste, stating, "Use of injection wells (Class I or Class II) in the future would be used to dispose of wastewater, produced water, spent fluids, and chemicals, as approved by the EPA, the [Alaska Oil and Gas Conservation Commission], or ADEC. Injection wells would be used to dispose of wastewater generated from the estimated field use of 2 million gallons per day. As a result, injection of wastewater reduces potential impacts on surface waters or the land by injecting wastewater deep underground into zones isolated from drinking water sources." We recommend that the EIS include additional analysis of the anticipated need for new underground injection wells to be drilled for disposal of wastes from field operations, the likely number of wells, how fluids would be transported to disposal well sites, potential impacts associated with the wells and the transportation, and how groundwater aquifers will be protected.	Further analysis of wastewater disposal wells will be discussed in the NEPA process for future development proposals. The amount of wastewater produced depends on the characteristics of petroleum reservoirs which are currently unknown.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Jill	Nogi	Environmental Protection Agency	71634	40	Reasonably Foreseeable Development (RFD)	Cumulative Impacts The DEIS includes oil and gas activities on non-federal lands among actions not included in the cumulative impacts analysis, while acknowledging that "The program area is next to State of Alaska lands and waters and contains inholdings owned by Alaska Native Corporations. Although there are no present plans to develop these non-federal lands for oil and gas, leasing in the Coastal Plain could result in exploration and development of recoverable hydrocarbons." Therefore, to the extent information is available, we continue to recommend that the EIS include a reasonably foreseeable development estimate for development on State or Alaska Native Corporation lands within or adjacent to the program area. This will provide an improved cumulative analysis of the potential future impacts on the environment from oil and gas development in the Coastal Plain, as required by NEPA.	The BLM cannot speculate on resource development of another agency or entity (aka create a hypothetical development scenario). The BLM can use reports that have been done for those lands to inform its own analysis and effects.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Withheld	Withheld	—	72125	27	Reasonably Foreseeable Development (RFD)	Alternatives must be based on actual Coastal Plain conditions. A simple sketch of a conceptual layout of oil development facilities, as depicted in the DEIS as Figures B-1 and B-2, does not substitute for a detailed geospatial analysis of RFD scenarios that is based on actual Coastal Plain conditions. The DEIS figure pop-up describes that, "[e]ach satellite pad is connected to the central process facility by a road and pipeline. One satellite pad connects to the export pipeline to the Trans-Alaska Pipeline System. Another satellite pad connects to the seawater treatment plant located on the Arctic Ocean coast. A conceptual location for the barge landing is also shown on the figure. Facility locations and sizes are conceptual and not to scale." The BLM's hypothetical development scenario is inadequate to support effects analyses, including addressing cumulative effects and connected actions. Current geospatial analysis and mapping technology should have resulted in a highly rigorous analysis and an informative landscape display of modelling outcomes for the Leasing DEIS. The Leasing DEIS demonstrates that the BLM did not take a hard look at the alternatives.	The impacts of actual locations of potential development components will be based on proposed development facilities that will each undergo NEPA review when proposed. There is not enough information available to accurately predict development locations nor infrastructure at this time. A proposed development will face its own share of limitations depending on location including, but not limited to, encumbrances, timing, acreage and market.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Withheld	Withheld	—	72125	28	Reasonably Foreseeable Development (RFD)	RFD scenarios should reflect the lessons of the Alpine Development, while applying the knowledge to Arctic Refuge Coastal Plain conditions. As demonstrated in the following narrative, any development plan must provide for safeguards to limit the growth of infrastructure: At first, the two initial pads, their connecting road, and an airstrip totaled about 100 acres. In the next 10 years, two additional pads were added, including one connected by an additional road of more than 3 miles, plus a pipeline. The other pad is joined to the first two pads only by a pipeline; to compensate for the absence of a road, it has its own airstrip. A fifth pad inside NPR-A was completed and is connected by a new 6-mile road; mineral rights at the fifth pad are owned largely by the Arctic Slope Regional Corporation. First production from the fifth pad began in October 2015. To support construction, additional facilities for office space and dormitories were added to the main Alpine camp. Altogether, the expansion of the field was expected to add roughly 27.5 miles of gravel roads to the first 3 miles of roads and to create 1,845 acres of disturbed soils, including 316 acres of gravel mines or gravel structures. Approximately 150 miles of roads would be constructed if the field is fully developed.	In developing its hypothetical development scenario (Appendix B), BLM considered all past and current North Slope development, as well as advances in operational technologies, focusing on more recent developments such as those in NPR-A.
15.	Withheld	Withheld	—	72125	34	Reasonably Foreseeable Development (RFD)	Abandonment and Reclamation Comments (Section B.7.5): Reclamation is not complete until a disturb area effectually contributes to conserving fish and wildlife populations and habitats in their natural diversity. A disturb area acreage could possibly be regained against the 2,000-acre limit in 19 to 130 years and not in 2 to 5 years as stated.	The time frames cited in the EIS describe the amount of time needed to implement reclamation, not the amount of time it may take thereafter for the reclamation to be effective.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Withheld	Withheld	—	72125	39	Reasonably Foreseeable Development (RFD)	Affected Environment and Environmental Consequences Comments (Section 3.1): The BLM describes the analysis as a, “good faith effort,” however, the DEIS does not demonstrate that the agency took a hard look at the effects of the proposed action and alternatives. A “hard look” is a reasoned analysis containing quantitative or detailed qualitative information. The Conceptual Layout of a Stand-Alone Oil Development Facility sketch that is presented in the DEIS in Figures B-1 and B-2 of potential pipelines and facilities does not meet the requirement of 40 CFR § 1502.24 - Methodology and Scientific Accuracy. Instead of the sketch, geospatial modeling of roads, pipelines, facilities, and disturbance areas associated with full field development should have been presented. NEPA reviews must take a hard look at impacts that alternatives under consideration would have on the human environment if implemented. This means that there must be evidence that the agency considered all foreseeable direct, indirect, and cumulative impacts, used sound science and best available information, and made a logical, rational connection between the facts presented and the conclusions drawn. Analyzing impacts means considering how the condition of a resource would change, either negatively or positively, as a result of implementing each of the alternatives under consideration. A written impact analysis that focuses on significant issues should be included in the environmental consequences section of a NEPA document. A written impact analysis should: (1) describe the impacts that each of the alternatives under consideration would have on affected resources; (2) use quantitative data to the extent practicable; (3) discuss the importance of impacts through consideration of their context and	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	intensity; and (4) provide a clear, rational link between the facts presented and the conclusions drawn.	(see above)
17.	Withheld	Withheld	—	73209	3	Reasonably Foreseeable Development (RFD)	It will be at least a decade or more before any hydrocarbons from this program would be available to markets, but what will energy markets be in that timeframe? The scope of this EIS is far too limited to justify proceeding with a leasing program without knowing where the products can be marketed in a realistic timeframe. The oil and gas are not being produced for the sake of production alone, and they won't be produced if in the next several decades, there will be no markets for them.	The hypothetical development scenario states in the Introduction (B.2) that it assumes favorable markets. This is based on the Energy Information Administration prediction that demand for petroleum products will continue for the next several decades.
18.	Richard	Edwards	—	74281	55	Reasonably Foreseeable Development (RFD)	It is useful to stop here to highlight that the Program Area with hydrocarbon potential consists of those acres north of the Marsh Creek anticline---essentially the far western end of the Area and a narrow coastal band leading toward Kaktovik (Map page B-3). The obvious disconnect between Section 20001(c)(3)'s lease acreage figures and the actual text in the Section is blatantly apparent. Under more rational circumstances, this disconnect might be more properly addressed by an Agency truly intent on following its management principles.	Hydrocarbon potential is highest to the north of the Marsh Creek anticline. As the cited USGS documents explain, there is petroleum potential in the rest of the 1002 Area, but with a considerably lower chance of an economically viable discovery.
19.	Withheld	Withheld	—	75257	3	Reasonably Foreseeable Development (RFD)	The development of the coastal plain proposed in this EIS is projected to require a minimum of 50 years. That's 2070. This EIS does a very inadequate job of describing the projected landscape, social, economic, and global climate / north slope climate conditions projected for 2070 - despite the existence of some excellent resources for inclusion.	The timeframes listed in Table B-3 are similar to what was used for NPR-A prior to first development when it was still considered a frontier basin.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	7	Reasonably Foreseeable Development (RFD)	there are still important limitations on directional drilling that would prevent the development of significant portions of the subsurface lands under these broad restrictions. Even with advances in extended reach drilling, such techniques would not bridge the vast distances contemplated in the DEIS as a result of the proposed NSO restrictions. A deep, high pressure reservoir may only allow a horizontal reach of up to two miles, whereas a shallower depth reservoir with a normal pressure profile may support up to seven miles, depending on rock properties encountered.59	Horizontal drilling capability distances are based on other North Slope developments in the expected productive formations.
21.	Brook	Brisson	Trustees for Alaska	81368	1	Reasonably Foreseeable Development (RFD)	The DEIS is based on unjustified production assumptions "that economically feasible oil accumulations would be discovered in all potential areas and that multiple anchor fields (each containing at least 400 million barrels of proven producible reserves) would be discovered" (p. B-13; emphasis added; "proven producible reserves" is not defined in the DEIS). The reasoning behind the hypothetical production is not presented or explained within the DEIS. In addition, despite the reasonably foreseeable restrictions on oil and gas activities in the Arctic due to weather and wildlife, the DEIS states that production activities would continue year-round (p. B-8).	If no economically feasible oil accumulation were found, no development would occur. If the EIS were to analyze this scenario, impacts could be underestimated. The hypothetical development scenario attempts to examine a maximum scenario for development to disclose the greatest impacts that might occur. The reasoning behind the hypothetical production is based on the number of wells and per well production from other North Slope developments. The minimum size needed to support the development of a central processing facility based on current information is 400 million barrels.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Brook	Brisson	Trustees for Alaska	81368	2	Reasonably Foreseeable Development (RFD)	The DEIS baseline scenario estimates two anchor fields can be developed by 2050; the first with six satellite fields, and the second with four satellite fields: - The first anchor and its satellite fields are assumed to have a combined 1 billion barrels (about 400 million barrels from the anchor field, and 100 million barrels from each satellite field) of "proven producible reserves." - "The assumption is that the second anchor field would be discovered and developed several years after the first anchor field and would have four smaller satellite fields that would be developed by 2050 and tie into its CPF" (central processing facility; p. 3-232). Production estimates should have been provided for the second anchor field and its satellite fields, but were not.	Production estimates from the second anchor field were reviewed and updated in response to this comment. The Draft EIS baseline scenario section has been changed and updated.
23.	Steven	Amstrup	Polar Bears International	81368	5	Reasonably Foreseeable Development (RFD)	Also missing is a clear statement of the recovery volume used in the Reasonably Foreseeable Development Scenario, and in other estimates throughout the DEIS. A range is repeated in the document: "The projected ultimate recovery in the Coastal Plain is estimated to be anywhere from 1.5 BBO [billion barrels of oil] to 10 BBO, based on the estimated daily production rate for the two to four main developments" (p. B-18). We found few references to a specific production estimate (3.4 BBO) (pages ES-3, 3-38, and B-1). The BLM should provide the projected recovery volume assumed for all analyses and discussions included in the DEIS.	The projected recovery is dependent on the timeline, discoveries, future economic conditions, and the number of completed and producing wells. It is too speculative to provide a specific production number. However numbers referenced from other documents are cited as written in those documents. The hypothetical development scenario has been revised to more clearly denote which estimates are from other documents.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Steven	Amstrup	Polar Bears International	81368	6	Reasonably Foreseeable Development (RFD)	Unrealistic Hypothetical Timeline of Development The length of time expected to elapse between the first lease sale and production is inconsistent within the DEIS document, varying from 8 years to 16 years: - "this analysis assumes that first oil production from the first CPF would occur 10 years from the first lease sale" (p. 3-232); - "The exploration phase of each anchor field and associated satellite fields can occur over a span of 10 years ... Following discovery, the development phase normally takes 3 to 6 years. ... The production phase can start after development of a CPF" (p. 3-232); and - "a time lag of at least 8 years is expected between the first lease sale and the beginning of production" (p. B-10).	Timelines have been reviewed for consistency.
25.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	7	Reasonably Foreseeable Development (RFD)	the timeline for the hypothetical development scenario (Appendix B) for the Coastal Plain does not consider all likely phases and is thus unrealistically short. It does not appear to allow for the numerous potential delays that could occur given the "optimistic, aggressive" reasonably foreseeable development scenario outlined in Appendix B. A reasonable timeline is critical because all economic impact estimates rely on this assumption. The potential delays acknowledged in the DEIS are: - Additional consultations with local, state, and federal stakeholders; - Additional studies that would be required for permitting; - Delays in exploration and development due to closures of certain environmentally sensitive areas; - Reductions in surface disturbance; - Additional facilities that could be required to address limited road access to the CPFs; and - Additional infrastructure, such as bridges, that could be required to avoid environmentally sensitive areas (pages 3-237 to 3-238 and p. B-24).	Timelines were reviewed. Delays will factor in future project level NEPA documents. Using an aggressive development scenario allows for analysis of maximum impacts in order to provide maximum NEPA coverage. Impacts of development may be less than those analyzed if it occurs at a slower pace.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Janet	Jorgenson	—	81671	5	Reasonably Foreseeable Development (RFD)	Hypothetical scenarios for development are given, but no hypothetical maps to help illustrate the differences between alternatives.	See Appendix A for maps of the alternatives, hypothetical maps with locations of project components are not provided because locations are unknown due to limited geologic information.
27.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	133	Reasonably Foreseeable Development (RFD)	Hypothetical Development Scenarios The DEIS states that 80% of petroleum resources are estimated to be west of the Marsh Creek Anticline. (DEIS, at B-5). Mean economically recoverable reserves in that area range from 7.46 to 2.72 BBO. (See Figure 20). As shown in Figures 21 and 22, BLM fails to describe how that significant concentration of total hydrocarbons in one-third of the 1002 area will impact development intensity across the Coastal Plain.	The hypothetical development scenario states the location of reserves in the northwest and that development is expected to begin in this area. Given the lack of exploration and 3D seismic in most areas it is not reasonable to state with certainty that all development will occur in this area.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	134	Reasonably Foreseeable Development (RFD)	The DEIS lays out a roughly circular Anchor Field concept economically producing a minimum of 400 MMBO and describes a Hypothetical Development scenario composed of three Anchor Fields, at no specified locations, economically producing a minimum total of 1.2 BBO. (DEIS, at B-13 to B-17) (See Figures 23 and 24). The DEIS fails to consider that oil accumulations are usually irregularly shaped (see Figure 21) and that the circular Anchor Field Concept must be modified accordingly. (See Figure 22). The DEIS does not describe the necessary range and size of individual Anchor Fields required to meet either the mean total estimate of hydrocarbon resources or the upside in line with the BLM's stated intention of describing "optimistic high-production" impacts. The DEIS fails to overlay and arrange Concept Anchor fields on the Coastal Plain in a way that recognizes differing development intensity arising from the uneven distribution of hydrocarbon resources. (See Figures 26-28). The DEIS does not consider that development of the Coastal Plain will require industrial support centers analogous to Deadhorse, which the BLM must also include in the impact assessment.	The field diagrams are conceptual and not intended to demonstrate the shape of oil accumulations. The locations of project components are not provided because locations are unknown at this time due to limited geologic information. It is unlikely that a industrial support center similar to Deadhorse would be constructed because the projected size of 1002 Area development will not be large enough to support this type of center and because Deadhorse is close enough to provide the required support. Other North Slope developments similar to probable Coastal Plain developments, such as Willow and Point Thomson, have not developed their own industrial support centers.
29.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	149	Reasonably Foreseeable Development (RFD)	The BLM's Anchor Field is an inadequate and misleading concept to describe the geometry of facility layout possibilities. Given the potential resource distribution, many variations of CPF and well pad arrangements are likely, including long linear strings of pads in addition to concentrated concentric rings and arcs of well pads surrounding a CPF.	Detailing every possible facility layout is not realistic, the concept diagrams are provided to show how roads and pipelines could be arrayed for the purpose of estimating distances for disturbance calculations.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	150	Reasonably Foreseeable Development (RFD)	The BLM's Anchor Field is an inadequate and misleading concept to describe facility layout in relation to field reserves and production levels. The DEIS assumes a single scenario of at least 400 MMBO reserves and 100 MBOPD production for each Anchor Field. The DEIS fails to analyze the minimum economic size field for development and how the Anchor Field would be modified, if at all, to fit. The DEIS also fails to analyze how the Anchor Field would scale up as field reserves and production levels increase.	As field locations and shapes are unknown at this time it is impossible to predict exact facility layouts. Future NEPA documentation for any proposed facilities will analyze these details.
31.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	151	Reasonably Foreseeable Development (RFD)	The BLM's Anchor Field is an inadequate and misleading concept to describe the full impact of development on the Coastal Plain. By keeping the Anchor Field a free-floating concept and not superimposing it (or the multiple and many versions of it required) over the land area it is not possible to visually understand and grasp impacts.	Detailing every possible facility layout is not realistic. The locations of project components are not provided because locations are unknown at this time due to limited geologic information. Future NEPA documentation for any proposed facilities will contain these details.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Joseph	McCarthy	—	82657	2	Reasonably Foreseeable Development (RFD)	This report's assumption that "Gas would be vented and flared only in emergency situations" (B-8) is contradicted by recent occurrences. The Houston Chronicle (Douglas, 25 January 2019) reported that natural gas flaring in West Texas is severely underreported and that drillers burned off nearly twice as much natural gas than reported to regulators. Even if flaring of byproduct methane was reported honestly by the private sector, BLM has recently decreased methane emission standards on our public lands. The BLM recently chose to "reduce unnecessary compliance burdens" (43 CFR Parts 3160 and 3170) further allowing extractors to emit methane directly into the atmosphere. With the natural gas glut, it is increasing unprofitable for companies to harvest byproduct natural gas /methane for resale, resulting in direct disposal into the atmosphere. The overwhelming trend is toward flaring or venting byproduct gasses directly into the atmosphere. The assumption that gas would be vented and flared "only in emergency situations" is completely incompatible with recent trends. The existence of this foundational, yet flawed, assumption invalidates all air quality analysis conducted throughout the overall report. A decision should not be made until air quality is properly assessed.	Gas will be re-injected into the formation to maintain reservoir pressure, which is an example of a newer business practice. Flaring or venting would only occur in situations where an equipment failure prevents re-injection or there is danger of equipment becoming over-pressurized. In these situations operators on federal lands must flare instead of vent as required by 43 CFR 3179.6(b). The geologic conditions are vastly different from West Texas where re-injection may not be a viable option.
33.	Robin	Stebbins	—	83751	3	Reasonably Foreseeable Development (RFD)	Nowhere in the DEIS, can I find any accounting of how the final oil products get from the CDFs to TAPS, other than "terrestrial pipelines to TAPS." Why are these 'export' pipelines not addressed in the DEIS? These terrestrial pipelines are as much an indirect impact of leasing as pipelines between satellite wells and their CDF.	The export pipeline to TAPS is included in total pipeline mileage calculations. Given the limited information currently available on exact pipeline routes, the impacts of this pipeline are not different from the impacts of other pipelines in the project area.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Robin	Stebbins	—	83751	4	Reasonably Foreseeable Development (RFD)	Although no route is given, the 'export' pipeline shown as short stubs in Figures B-1 and B-2 would have to at least stretch from roughly somewhere in the vicinity of Kaktovik to TAPS close to Prudhoe Bay, a distance of very roughly 250 miles. That pipeline would need an all-season gravel road to enable maintenance and repair in case of leaks. At 7.5 acres per mile of road, that comes to 1,875 acres to be counted against the 2,000 acre limit, just for the export pipeline service road spanning half of the lease area. That doesn't include the footprint of VSMs, pumping stations and other facilities associated with a longhaul pipeline. This impact alone precludes meeting the statutory limit.	Only pipeline miles within the 1002 Area would be counted toward the 2000 acre cap. The pipeline would likely tie into the existing pipeline connecting TAPS to Point Thompson. The service/ maintenance road, if built (monitoring can also be done by aircraft or low ground pressure vehicle), would be a small road sized for a single vehicle and would not occupy 7.5 acres per mile.
35.	Withheld	Withheld	—	87746	1	Reasonably Foreseeable Development (RFD)	the report claims, "Very little oil and gas exploration has occurred in this area, and there are no proven plays at this point (B-1)." Yet the report concedes (B-6), that a single exploratory well was drilled in the coastal plain. The results of this exploration are "maintained strictly confidential by the data owners" (Chevron, BP, and Arctic Slope Regional Corporation). I am concerned that BLM does not have this exploratory well data and lacks informational parity with these potential commercial lessees.	The well was drilled on private land. There are no federal ties to the well, and information on it is not available for the BLM.
36.	Withheld	Withheld	Government of the Northwest Territories	92862	85	Reasonably Foreseeable Development (RFD)	See reference to B.6 ~Bullet 19 "Gas would be vented or flared only in emergency situations." Comment(s) This assumption is not explained in the EIS. In the vicinity of Deadhorse there are a large number of flares visible. It is unclear from the draft EIS what technology has changed that there would not be a need for flaring except in emergency situations or a definition of what "emergency" means. Recommendation The GNWT recommends the BLM explain in the EIS what changes in technology that would allow no flaring, and describe what "emergency situations" means.	Gas will be re-injected into the formation to maintain reservoir pressure and enhance oil recovery, which is an example of a newer business practice than what was used in old Prudhoe Bay. Flaring or venting would only occur in situations where an equipment failure prevents re-injection or there is too much gas pressure to safely reinject.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Withheld	Withheld	Chevron U.S.A. Inc.	92880	1	Reasonably Foreseeable Development (RFD)	Specifically, Chevron asks BLM to: * Not prejudice hydrocarbon potential or preferred development location in the EIS, based upon the current limited and dated seismic information. Instead allow a comprehensive exploration phase to assess the hydrocarbon resource more thoroughly. We believe the statutory requirement to make the highest potential hydrocarbon areas available for leasing cannot be determined without modern 3D seismic and supporting exploration drilling.	The hypothetical development scenario maintains that all areas are prospective, but the High Potential is labeled as such due to the overlapping of many plays, and most of it resides within the undeformed area. This is supported by the conclusions of several USGS studies.
38.	—	—	Alaska Department of Natural Resources	94102	81	Reasonably Foreseeable Development (RFD)	57 Appendix B, B.7.2 Exploration Paragraph 3, Page B-12 and Appendix B, B.7.3, Development Paragraph 4, Page B-13 Development Scenario The text indicates water for exploration activities could be taken from nearby lakes or rivers. Current policy on Alaska's North Slope is to prohibit water withdrawal from rivers because of a general lack of winter flow and to maintain available free water for overwintering fish survival. Naturally grounded ice in rivers may be available for use on a case-by-case basis.	Text in the hypothetical development scenario has been changed in the Appendix to reflect this policy.
39.	—	—	Alaska Department of Natural Resources	94102	96	Reasonably Foreseeable Development (RFD)	58 Appendix B, B.7.3 Development, Page B-13 to B18 Development Scenario One item that seems to be missing in the development scenario is the likely need for extensive support facilities and services necessary for successfully operating an oilfield. This oilfield supply complex (essentially a "Deadhorse East") would likely include drilling contractors, equipment rental contractors, well testing, fuel storage, drilling mud storage, equipment maintenance facilities, and camp facilities. Additional pad space will be required for these facilities and operations. Proper food storage and handling, and solid waste management, particularly putrescible waste and attraction of bears and foxes to these wastes, are important issues to be evaluated in the total evaluation of these support facilities and services.	With a 2,000-acre limit for facilities on federal land, general, support facilities of this magnitude are likely to be located outside of the Coastal Plain.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Kenyon	Meyer	—	94105	3	Reasonably Foreseeable Development (RFD)	Appendix B of the DEIS containing the Reasonably Foreseeable Development Scenarios (the "RFD Scenario") makes clear that there is one critically important data set that the BLM is ignoring. According to the BLM, a single oil and gas exploratory well was drilled within the boundary of the Coastal Plain. This was the KIC#1 exploration well drilled in 1985/1986. Unfortunately, these data have been kept confidential by the data owners, Chevron, BP, and the Arctic Slope Regional Corporation.¹⁰ This well could potentially hold the key to some of the most valuable information in the project area. During exploration drilling, vital information and samples are collected about the rocks and fluids (water, gas and oil) encountered by the well in order to find out: (1) If there exists any hydrocarbons at that location; (2) how much oil or gas may be available at the present explored area; and (3) the depth at which the oil or gas exists and, thus, relevant information about the cost of extracting it. CEQ regulations demand information of "high quality" and professional integrity.¹¹ The Interior Department's obligations under authorities such as the Information Quality Act require Interior bureaus to use the best available data when preparing the DEIS.¹² By refusing to demand access to the exploration well data and to share that information with the public, the BLM is failing to meet the analytical rigor its mandates require. The BLM should require disclosure and analysis of this test well data before proceeding further with any leasing decision.	The well was drilled on private lands by private entities and the federal government does not have authority to force the owners to provide information on it. The well will only inform the specific local formations and their properties. There is no guarantee or expectation that the properties of the specific formations encountered in the wellbore would be consistent all across the Coastal Plain where that formation is present.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Mark	Jorgenson	—	94411	1	Reasonably Foreseeable Development (RFD)	BLM needs to act in accordance with NEPA law by providing reasonable forecasting and scenario development to adequately assess the range of foreseeable impacts. While leasing alone may not lead to development, the expectation of the leasing program is that there will be at least seismic exploration and exploratory well drilling, with substantial likelihood of full-scale development, oil spills and indirect impacts, and eventual land rehabilitation efforts. The document lacks sufficient description of these activities and site-specific scenarios to allow adequate evaluation as required by law. Because the DEIS identifies where there is high likelihood of economically recoverable oil, the document should also provide specific development scenarios that would be needed to develop that oil.	The indication of high likelihood of oil is not the same as knowing where the oil accumulations are located; without knowing the location of accumulations, it is impossible to create specific development scenarios. Additional NEPA analysis will be conducted before these exploration and development activities can commence.
42.	Mark	Jorgenson	—	94411	41	Reasonably Foreseeable Development (RFD)	In the DEIS, the proposed development would use ice roads on an annual basis to transport heavy facility modules, drilling equipment, fuel, heavy equipment, and other supplies. The DEIS is deficient, however, in not specifying the amount and tonnage that would be carried over the ice roads, the total volume of water needed on an annual basis, the thickness of the ice, the proposed routes, how slopes will be effect usage, and whether they will be constructed along the same alignment.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. It is also unknown the length or specific route of ice roads as so little information is available to determine where exploration or development may occur.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Greta	Burkart	—	96243	33	Reasonably Foreseeable Development (RFD)	Currently the BLM does not consider gravel mining sites and other major disturbances associated with oil development and production to be part of the cap on development in the 1002 Area. These areas should be considered in the development cap and the overall footprint of oil development and any subsequent analyses. Rehabilitation standards must be written into the leasing stipulations, especially pertaining to all gravel sources used on a lease, and also for all infrastructure used to support oil and gas activities. The rehabilitation should be to restore to the original condition, including natural diversity of plant species and populations, water quality, etc. The lack of adequate restoration plans and adequate bonds to cover reclamation of areas impacted by oil and gas development on the North Slope is a major problem (2003 NRC report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003)). According to the NRC (2003, page 158): "...only about 1% of the habitat affected by gravel fill on the North Slope has been restored. Other than for well plugging and abandonment procedures, state, federal, and local agencies have largely deferred decisions about the nature and extent of restoration. The lack of clear performance criteria, standards, and monitoring methods at the state and federal level to govern the extent and timing of restoration has hampered progress in restoring disturbed sites. If restoration would make potential future use of a site more expensive or perhaps impossible, restoration is likely to be deferred." The NRC (2003, page 150) states the following: "Because the obligation to restore abandoned sites is unclear and the financial resources to do so are so uncertain, the committee judges it likely that, absent a change in	Gravel mining is considered to be an oil and gas related disturbance and will count toward the 2,000 acres. The hypothetical development scenario has been updated to reflect this. Reclamation plans must be submitted within the Surface Use Plan of Operation containing the specific information required under Onshore Oil and gas Order #1, Section III.D.4.j and XII. Bonding is required for all operations 43 CFR 3104 and Onshore Order #1 III.D.5.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	those constraints, most of the disturbed North Slope habitat will never be rehabilitated or restored." Appendix B of the draft EIS states that after rehabilitation of areas, these areas will no longer be considered as part of the cap on infrastructure. If the area is not restored to the original condition, including natural diversity of plant species and populations, water quality, etc, it should not be released from the cap. Currently there are no stipulations requiring what level of restoration will be required for an area to be released from the cap. To disclose impacts accurately and to help ensure protection of the purposes of the Arctic NWR, restoration standards must be included set in stipulations in the draft EIS for oil leasing in the 1002 Area. The EIS must clearly state what level of restoration will be required before land is no longer considered part of the infrastructure development cap. To avoid the issues noted by NRC (2003) and protect Refuge purposes, a restoration plan that include details on the level of restoration required and the expected cost of the restoration must be required and reviewed prior to issuing a lease in the 1002 Area. The oil companies must pay bonds consistent with restoration cost estimates prior to permitting.	(see above)

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44.	Brook	Brisson	Trustees for Alaska	96981	126	Reasonably Foreseeable Development (RFD)	The draft EIS provides little information on gravel mining beyond an estimated number of cubic yards of gravel needed for each action alternative. The draft EIS anticipates that between 12.7 to 12.4 million cubic yards of gravel will be needed for the Coastal Plain exploration, construction, development, and maintenance. ⁸³⁹ It is seemingly impossible to check the veracity of this number, as the Reasonably Foreseeable Development (RFD) scenario does not provide incremental gravel needs for various elements of potential infrastructure projects (e.g., central processing facilities, anchor pads, and airstrips are all combined). ⁸⁴⁰ Nor does the RFD scenario adequately explain its estimates for the slight differences in road lengths between alternatives, and assumes that all roads to all satellites would be the same length and width for every alternative. ⁸⁴¹ It is entirely unclear whether BLM factors in the need for additional gravel (e.g., for roads that expand in width during use) and river and stream crossings, vehicle turnouts, or storage pads into these estimates. BLM needs to provide far more information about the potential gravel resources necessary for each alternative to adequately analyze potential impacts.	Gravel calculations were made based on data from NPR-A EIS and Point Thomson EIS documents, and are based on gravel mining and usage from those developments. Exact road lengths and pad acreages would be provided and impacts analyzed in development plan authorizations. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. It is not possible to predict the length or specific route of ice roads as little information is available to determine where exploration or development may occur.
45.	—	—	United States Fish and Wildlife Service	97942	3	Reasonably Foreseeable Development (RFD)	The analysis and area estimates for 3-D seismic used in the Reasonably Foreseeable Development Scenario are now based on the incorrect assumption that area-wide seismic would occur prior to the Record of Decision. This affects the impact analysis throughout the document.	The hypothetical development scenario has been revised to reflect this. Assumptions regarding seismic surveys have been updated.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	—	—	United States Fish and Wildlife Service	97942	5	Reasonably Foreseeable Development (RFD)	The DEIS should clarify the criteria used to define the area of high hydrocarbon potential, given that the Tax Act requires that "each sale offer for lease at least 400,000 acres of the highest hydrocarbon potential (HCP) lands within the Coastal Plain." Specifically, it is not clear how the DEIS arrives at delineating an area of moderate potential and how this area meets the high HCP criteria set forth in the Tax Act for lease sales. The USGS resource assessment of the 1002 Area (USGS 1998) delineates only high and low resource potential areas, associated with the deformed and undeformed areas to either side of the Marsh Creek Anticline. According to the values from the USGS reproduced in the Draft EIS as Appendix B Table B-1, nearly 85% of the in-place oil is in the undeformed area and only about 15% is within the deformed area.	The ranking of potential is based on USGS reports regarding the probable locations and accumulations of oil in the program area as well as distance to existing infrastructure. Based off best available information, the action alternatives maximize the areas with the highest HCP; action alternatives balance areas with highest HCP with surface resource protection. Because there are only an estimated 427,000 acres of high HCP, in order to get to an 800,000 acre lease sale, areas in medium HCP and low HCP would also need to be included in the lease sale (while still balancing resource protections).
47.	—	—	United States Fish and Wildlife Service	97942	203	Reasonably Foreseeable Development (RFD)	Total projected ice road use should be presented under development scenarios. It is expected that ice road use could increase greatly under Alternative B. Without assessments of ice road use under all alternatives, it is not possible to adequately conduct analyses of the impacts of development on vegetation, fish, other aquatic species, birds, soils, and water.	Ice road use would vary from year to year and would vary based on the results of exploration and stage of development. It is not possible to accurately project ice road use at this stage. Future NEPA documentation for any proposed development plans will analyze these details.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Jamie	Williams	The Wilderness Society	98058	2	Reasonably Foreseeable Development (RFD)	One of the many significant deficiencies in the DEIS is the failure to include maps, diagrams, or visuals depicting the reasonably foreseeable extent and location of development and associated infrastructure - including well pads, pipelines, gravel mines, roads, central processing facilities, industrial centers for oilfield service providers, seawater treatment plants, airstrips, powerlines, telecom towers, equipment storage pads, rig laydown areas, and barge landings - that can be expected under each alternative. This critical omission prevents agency decision-makers and the public from understanding and being able to meaningfully analyze and comment on the sprawling and interconnected nature of the infrastructure associated with a realistic development scenario.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
49.	Lois	Epstein	—	98145	2	Reasonably Foreseeable Development (RFD)	Fourth, the draft EIS does not show the sprawling nature of oil development on a map that would allow the public to visualize and comment on the extensive nature of development. The public has a right to full disclosure of impacts that would result from each of the alternatives.	This level of specificity would be determined at the project-level authorization. At this leasing stage the location of potential discoveries and developments are unknown. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Brook	Brisson	Trustees for Alaska	98269	22	Reasonably Foreseeable Development (RFD)	Appendix B says that mean oil production in the Coastal Plain is estimated at 3.4 BBO by 2050. ³¹² This estimate is used to develop the number of spills and spill sizes. ³¹³ Appendix B also says, however, that “the projected ultimate recovery in the Coastal Plain is estimated to be anywhere from 1.5 BBO to 10 BBO...” ³¹⁴ This range of values is not used in the spill analysis. Based on the limited seismic, well, and geologic data available to estimate production, it seems technically supportable for BLM to utilize a range of production values in its analyses.	Spill estimates have been revised to use a range of production and spills.
51.	Brook	Brisson	Trustees for Alaska	98269	57	Reasonably Foreseeable Development (RFD)	First, the RFD ignores best available scientific information and data from the U.S. Geological Survey (USGS). ...In 1998, USGS analyzed the available data and produced a “Petroleum Assessment” paper, 454 the most recent comprehensive analysis. BLM used the findings of this paper in developing its RFD. However, BLM ignored more recent USGS work to reprocess the 2D seismic data and conduct fieldwork. That information is not referenced in the RFD or the DEIS and must be included. Moreover, USGS is not a cooperating agency in the leasing EIS and, to our knowledge, did not participate in developing the RFD or DEIS - despite USGS’ critical knowledge of the best available information that must inform the RFD. ⁴⁵⁵	The most recent USGS studies of the area were used in addition to older ones. That research is in the References section under the author’s name (Attanasi, E. D., and P. A. Freeman 2009 and Attanasi, E. D. 2005).

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Brook	Brisson	Trustees for Alaska	98269	58	Reasonably Foreseeable Development (RFD)	Using these assumptions, the limited data used by USGS, and its internal models, EIA projected mean oil production from the Coastal Plain for the period 2031-2050 at 3.4 BBO.460 This figure is essentially impossible for the public to verify as it was developed using EIA's internal models. Moreover, EIA's estimate only projects out to 2050 and not the much longer 85-year development scenario used by BLM. It is also in the bottom quartile of the range of production, 1.5 to 10 BBO, that BLM uses elsewhere in the DEIS,461 which most likely derives from Table 1 of the EIA paper showing mean Technically Recoverable Crude Oil Resources ranging from 1.4 to 10.4 BBO.462 BLM needs to verify the 3.4 BBO figure and the 1.4 and 10.4 BBO figures by analyzing and disclosing the details of EIA's models, including how and why it uses USGS' estimated production values that include oil produced from Native lands and state waters.	USGS estimates were used for estimating production ranges. The USGS estimates were also used as references for the Energy Information Administration (EIA) estimates that this comment is referring to. The BLM does not have the model EIA used. The wide range of estimates in the BLM model means that the removal of Native Lands and State waters from the estimates does not have a significant impact compared to the uncertainty about the size and location of oil accumulations.
53.	Brook	Brisson	Trustees for Alaska	98269	60	Reasonably Foreseeable Development (RFD)	Moreover, BLM should consider developing a range of alternative development scenarios based on different predictions of the available petroleum resource.	Such an alternative would have impacts similar to alternatives already analyzed. Based off best available information, and to comply with the Tax Act, the action alternatives maximize the areas with the highest hydrocarbon potential (HCP); action alternatives balance areas with highest HCP with surface resource protection. The 2000-acre facility limit is presumed to apply equally among the action alternatives, and serves to restrict overall development comparably.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Brook	Brisson	Trustees for Alaska	98269	61	Reasonably Foreseeable Development (RFD)	BLM bases its RFD on factors that the public cannot verify or test - things like "its own knowledge of the almost entirely unexplored petroleum endowment of the Coastal Plain" and its "professional judgment."464 It must do a better job explaining the basis for its assumptions. For example, it cites the "history of development in the National Petroleum Reserve-Alaska" as one of the bases for the scenario.465 BLM should explain more fully why it is reasonable to assume that development in the Coastal Plain will approximate development in a geographically and geologically very different region of Alaska. For example, there are no data showing the viability of Nanushuk formation oil in the Refuge, even though the Nanushuk formation is the basis for development of the NPR-A's Willow project.	The NPR-A is used as a guide due to management familiarity and it also being a prospective frontier basin under federal management. Additionally, it has been studied and documented from pre-leasing to first production. There is no intent to correlate specific geologic formations, but rather to use/identify Coastal Plain formations that hold similarities to those in NPR-A. Trapping mechanisms, both stratigraphic and structural, appear to hold some similarities to NPR-A as well. The BLM uses development pad models and facilities based on the smaller footprint in NPR-A as well as the CD pads at Alpine and proposals for Pikka and other State of Alaska projects.
55.	Brook	Brisson	Trustees for Alaska	98269	62	Reasonably Foreseeable Development (RFD)	BLM does not describe how its development scenario infrastructure predictions relate to the potential oil it estimates could be produced from the Coastal Plain. This is an important omission. BLM states that the range of potential oil production is from 1.5 to 10 BBO.466 Presumably the infrastructure required to produce these very different amounts of oil, and the amount of likely spilled oil, differs dramatically. BLM should explain how the estimates of the amount of the technically recoverable oil resource in the Coastal Plain connects with the scenario it uses to assess impacts.	The amount and rate of production is limited by the rate at which wells and other infrastructure can be installed and the 2000 acre development cap. Producing 10 BBO would take much longer and require more infrastructure than producing 1.5 BBO. The spill estimates have been revised to encompass the entire range of production for use in assessing impacts.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Brook	Brisson	Trustees for Alaska	98269	63	Reasonably Foreseeable Development (RFD)	Table 1 from the EIA report shows that there likely would be 3 anchor fields if the field sizes were at least 400 million barrels of oil, and that there would be 8 anchor fields if the field sizes were merely 10 percent less (i.e., at least 360 million barrels of oil). ⁴⁶⁷ Thus, if industry chooses to develop slightly smaller fields due to any number of factors (e.g., if the projected price of oil was slightly higher or if the oil discovered is of higher quality than expected), there would be far more development across the Coastal Plain than assumed in the RFD scenarios and the DEIS alternatives. As a result, BLM's assertion that, "[t]o minimize the chance that the . . . impact analysis will understate potential impacts, [its RFD scenarios] represent optimistic high-production, successful discovery and development scenarios in a situation of favorable market prices" ⁴⁶⁸ is not supported. The RFD must include scenarios that accurately reflect different potential ways of developing oil fields, such as through smaller and more numerous fields that could have very different levels and types of impacts. Relatedly, BLM should also use a development scenario based on a petroleum estimate that represents potential maximum impacts, which is particularly appropriate for a programmatic decision with the degree of uncertainty that BLM is facing.	Although configurations and ratio of anchors to satellites could change, overall development would still be limited by the 2,000-acre cap in these scenarios, under all action alternatives.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Brook	Brisson	Trustees for Alaska	98269	64	Reasonably Foreseeable Development (RFD)	BLM appears to assume that no gas will be developed in the Coastal Plain because there does not yet exist a transmission pipeline to bring natural gas to market from the North Slope. ⁴⁶⁹ However, plans for such a pipeline are presently being developed through a Federal Energy Regulatory Commission process. In light of the long time horizon for the development scenario and the current planning process for delivering North Slope gas to market, BLM should consider assessing fully the potential effects of natural gas production in its development scenario.	The hypothetical development scenario and cumulative effects analysis assume a major natural gas pipeline will be constructed to move gas from the North Slope to market. Accordingly the hypothetical development scenario assumes eventual gas production. However, stranded gas from other prospects closer to existing infrastructure is expected to be produced first.
58.	Brook	Brisson	Trustees for Alaska	98269	65	Reasonably Foreseeable Development (RFD)	BLM states that production wells would be fractured to stimulate initial production, but assumes that there will be no oil or gas developed on the Coastal Plain through hydraulic fracturing of shale. This type of development would be much denser and would require different production processes than conventional oil and gas development including the need to utilize and manage large quantities of sand, water, and hydraulic fracturing chemicals. BLM should assess fully the potential effects of fracturing during initial production and for shale oil or gas development in a revised draft EIS.	Initial fracturing does not require the chemicals or amounts of water that shale fracking requires. There is no known potential for shale oil or gas development. Conventional oil development is what is assumed for the Coastal Plain.
59.	Brook	Brisson	Trustees for Alaska	98269	66	Reasonably Foreseeable Development (RFD)	BLM does not vary the amount of oil that would be produced among the different alternatives it assesses. ⁴⁷⁰ It is reasonable to assume that varying the areas available for leasing would vary the amount of oil that could be discovered and developed in the Coastal Plain. BLM should consider utilizing a range of oil production values in alternative scenarios. Relatedly, if BLM is assuming that one area or play is likely to be developed first - like the Topset play - BLM should pay particular attention to the effects of this and fully evaluate the likely development and associated impacts now, as it is more likely to happen. ⁴⁷¹	Without specific data regarding non-proven plays, the BLM must assume that resource accumulations could occur anywhere within the play boundaries. Because of the uncertainty in the total amounts of recoverable oil and the unknown locations of pools, the results of a projections by alternative could drastically misstate recovery amounts. The BLM does assume that development would begin in high potential area along the west and north of the Coastal Plain, and impacts are being modeled in that way.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Brook	Brisson	Trustees for Alaska	98269	67	Reasonably Foreseeable Development (RFD)	Fourth, the RFD unreasonably assumes that development may occur in low potential areas. The Tax Act requires BLM to hold two lease sales that offer at least 400,000 acres each in "areas that have the highest potential for the discovery of hydrocarbons." As described above, the Tax Act does not require low hydrocarbon potential areas to be made available, and BLM should eliminate them. Relatedly, the EIS assumes that there will be multiple lease sales held while the Tax Act only mandates two. ⁴⁷² It is unclear if and how BLM's RFD is based on more than two lease sales, but BLM should clarify this.	Low potential is not the same as no potential. The BLM will comply with the required number of acres being available and the required two lease sales, however the Tax Act does not limit the number of lease sales. The need for appropriateness of subsequent lease sales would be determined after the first two mandated sales are held. The assumption that there may be three or more sales helps assure that impacts of the leasing program are not underestimated.. The BLM is also required to consider other mandates and guidance when considering which areas will be offered for lease.
61.	Brook	Brisson	Trustees for Alaska	98269	68	Reasonably Foreseeable Development (RFD)	The DEIS does not contain a map drawn to scale showing the realistic and sprawling nature of oil development under the different alternatives. Such a map - which could use symbols to show well pads, pipelines, gravel and ice roads and gravel mines, Central Processing Facility and other building infrastructure - would allow the public to visualize and comment on the extensive nature of the development. Oil development infrastructure is likely to be more dense in the portion of the Coastal Plain with high hydrocarbon potential and less dense in areas with lower hydrocarbon potential, for example. The public has a right to full disclosure of the impacts that would result from each of the alternatives. Such a map would provide the public with a more realistic understanding of the nature of the development, especially because it would counter the misimpression that only 2,000 acres of the Coastal Plain will be impacted. BLM should include a map in a revised draft EIS showing the build-out of all likely oil development on the Coastal Plain following the lease sales.	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. The hypothetical development scenario estimates occurrence and development potential and projects future activity to the extent possible based on best available data. It would be speculative and unreasonable to identify exact areas where activities might occur because sufficient data regarding subsurface conditions is not available.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Brook	Brisson	Trustees for Alaska	98269	97	Reasonably Foreseeable Development (RFD)	BLM must fully disclose the direct, indirect and cumulative impacts of hydraulic fracturing ("fracking") and other well stimulation techniques that could be used under leases in the Arctic Refuge. Its failure to do so violates NEPA. Available information indicates that fracking is increasingly being used in Alaska, both onshore and offshore. ⁵⁰² And the Draft EIS acknowledges that oil companies will frack wells to stimulate initial production. But the Draft EIS wholly fails to analyze the increased risks inherent in these practices.	Hydraulic fracturing for unconventional resource production (aka breaking of shale formations) will not be done and is not analyzed. The North Slope uses some minor reservoir stimulation within reservoir rocks (sandstones) but it is contained within the formation. This kind of stimulation is different from hydraulic fracturing going on in the Continental US.
63.	Brook	Brisson	Trustees for Alaska	98269	98	Reasonably Foreseeable Development (RFD)	The water withdrawal from lakes for the use in fracking must be evaluated. Between 2000 and 2014, the average water used for fracking a horizontal well increased from 177,000 gallons to 4 million gallons. ⁵²⁶ The substantial water withdrawals needed for fracking could cause fish mortality and low water levels in the project area, which could also harm birds like the yellow-billed loon and spectacled eiders.	This type of hydraulic fracturing is not occurring anywhere in the Arctic. Water withdrawals are evaluated in the water resources section and in project-level NEPA analyses.
64.	Brook	Brisson	Trustees for Alaska	98270	145	Reasonably Foreseeable Development (RFD)	The DEIS does not adequately describe shipping activities associated with the proposed action, including the various alternatives. There is no clear discussion of what kinds of vessels will be used, how many vessel transits are expected, what cargo and materials they will carry, or how fast they are expected to travel. The limited information provided is scattered throughout the DEIS, and it is misleading in suggesting that shipping traffic will be limited to two barge convoys per year carrying project modules. ¹⁸⁸⁰	The hypothetical development scenario in Appendix B describes the anticipated level of barging activity in support of oil and gas operations, which is very low. This level of specificity would be determined at the project-level authorization.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Brook	Brisson	Trustees for Alaska	98271	16	Reasonably Foreseeable Development (RFD)	BLM does not include an estimate for the water needed to support seismic exploration, but SAExploration's pending project proposal will use 3,500 gallons per day. It is also not clear if BLM included water supply needs for camps (100 gallons per person per day) and general road and pad maintenance (20% of the initial water used to construct the road and pad for the season), both of which can use significant amounts of water.882 BLM must be sure that it is including all potential oil and gas program uses of water in order for the agency to be able to evaluate the impacts.	ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed. Water use estimates do include support activities as well as development activities unless the usage is specifically noted.
66.	Brook	Brisson	Trustees for Alaska	98271	17	Reasonably Foreseeable Development (RFD)	It is hard to discern how much water would be used under each alternative because BLM does not include that clear information. BLM should add a chart to the final EIS that clearly depicts how much water would be used for all phases of oil and gas under each alternative, based on its development scenarios. Regardless, this is an extraordinary amount of water needed. It is unlikely that there is even that quantity of water available for use on the Coastal Plain. For example, BLM estimates that there are only 1.1 billion gallons of water available by the end of the winter season, with 80% of that volume coming from seven lakes in the Canning River Delta.883 FWS has previously found that there is only enough available water in the winter to construct a few miles of ice roads.884	The hypothetical development scenario anticipates that a seawater treatment plant would be used to provide much of the needed water in the project area. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed. The total amounts of water needed would vary significantly depending on the scale of development which would depend on the results of exploration.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Withheld	Withheld	—	72125	29	Reasonably Foreseeable Development (RFD)	To be NEPA compliant, each RFD scenario/alternative for the Arctic Refuge needs to model and identify the potential locations of production pads, standard roads, ice roads, gravel mines, pipelines to be used to transport oil, airfields, helipads, arctic seawater treatment plants, water diversions and withdrawal areas, oil storage tanks, and other infrastructure such as production and support facilities including housing and offices.	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. The hypothetical development scenario estimates occurrence and development potential and projects future activity to the extent possible based on best available data. It would be speculative and misleading to identify exact areas where activities might occur because sufficient data regarding subsurface conditions is not available.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Withheld	Withheld	—	72125	26	Reasonably Foreseeable Development (RFD)	The “hypothetical scenario” presented does not demonstrate taking a hard look at the effects of the alternatives. The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of change (impact) caused by the proposed action and alternatives (40 CFR § 1502.1). The leasing EIS and the Reasonably Foreseeable Development (RFD) scenarios for the alternatives considered must account for the full potential development footprint. The accepted analysis practice is to prepare a scientifically based and well-documented RFD scenario. A scientifically based and well-documented RFD scenario is a critical component of information necessary for performing thorough cumulative effects analyses of oil and gas activities that could occur as a result of leasing. A RFD provides information needed to facilitate the allocation of areas for leasing, and to build the management framework for oil and gas resource development. A RFD scenario provides information needed to facilitate the allocation of areas for leasing, and to build the management framework for oil and gas resource development. It should identify areas where different levels and/or types of activities might occur.	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. The hypothetical development scenario estimates occurrence and development potential and projects future activity to the extent possible based on best available data. It would be speculative and misleading to identify exact areas where activities might occur because sufficient data regarding subsurface conditions is not available.
69.	Withheld	Withheld	—	75257	2	Reasonably Foreseeable Development (RFD)	The hypothetical development scenario in Appendix B assumes a minimum amount of time to reach the 2000 acre development limit. Instead, a range of timing options for leasing, development, production, processing, and transportation needs to be fully considered and analyzed since market conditions may vary greatly, technology increases may benefit waiting, and resources like caribou, water, soil, insects, birds, subsistence hunting, recreation activities, and wilderness character will all be affected differently depending on how development is timed.	The hypothetical development scenario estimates occurrence and development potential and projects future activity to the extent possible based on best available data. Ranges of time periods are provided in Appendix B for the various stages of the oil and gas program. These estimates assume aggressive interest in leasing, exploration and development, such that impacts will not be underestimated.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	11	Reasonably Foreseeable Development (RFD)	The "reasonably foreseeable development scenario" must recognize development limitations under certain alternatives, but currently provides a reasonable basis for assessment of Alternative B. As noted in Section III.C supra, the proposed NSO stipulations in Alternatives C, D1, and D2 would effectively prevent development of the Coastal Plain area. The "reasonably foreseeable development scenario" presented in Appendix B of the DEIS fails to consider that the best prospects for commercially attractive development may be off-limits for development under these alternatives. In addition, it fails to consider how the number of pads, wells per pad, and size of surface facilities would be impacted by surface area restrictions, in turn impacting production rates and recovery. For the reasons explained above, the Associations believe that Alternatives C, D1, and D2 are not reasonable and should not be included in the FEIS; however, if the FEIS includes these or similar alternatives, the hypothetical development scenario must be revised to acknowledge that development is unlikely to occur under those alternatives.	While management would be more restrictive under Alternatives C, D1, and D2, the assumption is that the resource would be present. Without specific data regarding non-proven plays, the BLM must assume that resource accumulations could occur anywhere within the play boundaries. Because of the uncertainty in the total amounts of recoverable oil and the unknown locations of pools the results of a projections by alternative could drastically misstate recovery amounts. The BLM does assume that development would begin in high potential area along the west and north of the Coastal Plain and impacts are being modeled in that way.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	12	Reasonably Foreseeable Development (RFD)	First, the hypothetical development scenario should consider more realistic development timeframes. In the NPR-A, nearly 20 years transpired from initial lease to first production. BLM should consider this experience for its 1002 Area timing assumptions. Second, the hypothetical scenario should assume a mix of large and small facilities that are likely to share infrastructure, such as roads and support facilities. It should also assume that a seawater treatment facility may be needed in more than one location (e.g., west and east). Technological advances will also result in fewer satellite pads and other surface infrastructure than anticipated in the hypothetical scenario. BLM should consult with industry to ensure the hypothetical scenario accurately reflects current practice and expectations.	The hypothetical development scenario is designed to present the maximum impact scenario to avoid under-stating environmental impacts in the analysis. Infrastructure is expected to be shared where possible due to the cost and complexity of infrastructure construction in the arctic. ROP 21 discusses minimizing impacts of the development footprint, including co-location of facilities.
72.	Susan	Lubetkin	—	75234	6	Reasonably Foreseeable Development (RFD)	List of potential oil production values It's hard to get a sense of how much oil is predicted to be produced from the DEIS. The third paragraph of Appendix B of BLM's Coastal Plain DEIS lists several potential volumes, none of which match the amounts shown in Table B-1 (p. B-5), B-2 (p. B-6), or their combined volumes (Table 5).	Due to the limited knowledge regarding petroleum geology of the Coastal Plain it is impossible to predict future production, which is why this document uses a range of values. These ranges have been checked for consistency.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	103	Reasonably Foreseeable Development (RFD)	Proposed Production Levels. The DEIS states: To minimize the chance that the resultant impact analysis will understate potential impacts, the hypothetical scenarios described in this document represent optimistic high-production, successful discovery and development scenarios in a situation of favorable market prices. (DEIS, at B-2). Despite this assertion, the DEIS fails to present an optimistic high-production development scenario. The BLM proposes a single Hypothetical Development Scenario composed of up to three Anchor Fields with a minimum of 400 MMBO economically recoverable oil each. This totals a minimum of 1.2 BBO for the Hypothetical Development Scenario. The BLM's Hypothetical Development Scenario fails to reach even half of the lowest reported value of mean economic reserves as estimated by the U.S. Energy Information Administration (EIA). ⁷³ Moreover, the BLM fails to propose a mean or upside Hypothetical Development Scenarios in line with reported reserves in order to meet its stated goal of representing optimistic high-production development.	Production rates in the timeline of this document are limited by the time it takes to construct infrastructure and bring wells on-line. Total production amounts over the life of the fields in Refuge could easily reach estimates. The 400 million barrels is minimum needed to warrant construction of a CPF. It does not imply that it represents the largest potential oil field.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	104	Reasonably Foreseeable Development (RFD)	Possible Production Levels. The DEIS assumes that approximately eight years after its Record of Decision (ROD), production from the first Anchor Field would begin and then ramp up over a minimum of nine years to a peak of 100 MBOPD which would hold for three years before declining at a rate of 8% per year to the economic limit. (DEIS, at B-8, B-11). Based on this scenario and with an estimated 50 MBOPD economic limit, the sum of production over the life of the Anchor Field is approximately 400 MMBO. By staggering development of the two subsequent Anchor Fields to begin when drilling ends for the previous one, peak production for the BLM's Hypothetical Development Scenario for all fields increases to 156 MBOPD in 2045. (See Figure 7). Figure 7. Production level for the BLM's Hypothetical Development Scenario composed of three Anchor Fields. Figure 7. Production level for the BLM Hypothetical Development Scenario composed of three Anchor Fields. To calculate peak production for USGS's mean estimate of 9.2 BBO economically recoverable reserves a single field was modeled with the same timing, drilling, and decline assumptions as above but with a total field life of fifty years. (See comparison in Figure 8). This demonstrates that the DEIS greatly understates likely production.	The 400 million barrels is minimum needed to warrant construction of a CPF. It does not imply that it represents the largest potential oil field. Each satellite pad may contain up to 30 well slots and it is assumed a 6-mile horizontal reach for production.
75.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	4	Reasonably Foreseeable Development (RFD)	- The drilling muds contaminated with toxins like benzene, zinc, arsenic and radioactive materials stay in the surrounding land on a long-term basis. Injections wells that put waste waters and contaminated drilling muds with high pressures into deep soil levels has been associated with higher earthmovement risks. They are planned for the industrialized areas but earthquakes naturally won't be limited to these areas.	Drilling muds are captured when removed from the wellbore and will not touch surface lands. Injection into deeper, stable formations are well known in advance and approved by ADEC. Appendix B has been updated to describe this process.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
76.	Lin	Davis	—	75891	4	Reasonably Foreseeable Development (RFD)	There is no map to show the public the extent of oil pads, ice roads, pipelines, gravel mines and other infrastructure. Likely the acres allowed by Congress would not include other extensive infrastructure needed for the project. Likely a convenient loophole allows more than the public thinks will be developed .	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas. The hypothetical development scenario estimates occurrence and development potential and projects future activity to the extent possible based on best available data. It would be speculative and unreasonable to identify exact areas where activities might occur because sufficient data regarding subsurface conditions is not available. The Tax Act specifically makes 2,000 acres available for oil production and support facilities, the BLM will not permit any permanent facilities above that acreage.
77.	Withheld	Withheld	—	41048	5	Reasonably Foreseeable Development (RFD)	The draft EIS also makes statements and assumptions in Appendix B concerning the price of oil in the future that have no basis in reality. Oil prices are currently dropping and there is a worldwide glut of oil. The claim in Appendix B-1 "that crude oil prices will continue to rise in the next 20 years" is fantastical, all trends indicate that the demand for oil will continue to drop (along with its price) due to the rising use of other types of energy and changing technologies.	Oil price estimates were created by the EIA. See Crude projections here https://www.eia.gov/outlooks/aeo/data/browser/#/?id=12-AEO2019&cases=ref2019&sourcekey=0 .

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
78.	Withheld	Withheld	—	55252	10	Reasonably Foreseeable Development (RFD)	the DEIS just projects a 50-year life for the production facilities. The production facilities at Prudhoe Bay are going strong and will certainly exceed 50 years. There is not a reasonable basis to limit the production life of the facilities on the North Slope, including the Coastal Plain of the Arctic National Wildlife Refuge, to 50 years.	The overall program duration is expected to exceed 50 years (see Appendix B).
79.	Withheld	Withheld	—	56788	3	Reasonably Foreseeable Development (RFD)	I believe that the oil and gas potential of the Coastal Plain has been vastly over-estimated by the US Geological Survey, and their analysis is based on overly-optimistic and flawed assumptions. In particular, it is my opinion that key North Slope reservoir and source rock units are missing (eroded) in much of the subsurface of the ANWR Coastal Plain, and that most of the traps formed too late to capture much of the oil, if ever generated. I think that exploration will result in the discovery of mostly gas, which will have to await conversion of the Trans-Alaska Pipeline to gas and then "get in line" behind all the existing "stranded gas" on the North Slope (Prudhoe Bay, Kuparuk) before it will ever be monetized. Furthermore, the current glut of gas in the lower 48 states will hardly encourage development of ANWR gas for domestic consumption. Thus, the economic benefit of opening ANWR that is imagined by many will be not be realized.	This information is subjective and not supported by any data references. The USGS assessments reflect the best available science. Future 3D seismic exploration and drilling would clarify the state of subsurface conditions before production would begin.
80.	Philip	Marshall	—	67580	3	Reasonably Foreseeable Development (RFD)	No where is dredging addressed to handle deeper-hulled craft nor varying seabed profiles.	Added to the hypothetical development scenario that dredging (if required) will be analyzed in proposals that call for it.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Withheld	Withheld	—	68965	76	Reasonably Foreseeable Development (RFD)	The Terrestrial Mammal analysis is also noteworthy because it includes consideration of some activities such as blasting at sand and gravel pit sites and installation of power lines (pg. 3-113). If these activities are reasonably foreseeable aspects of the proposed program, they should have been described in Appendix B and analyzed in sections that dealt with other resources, for example "Birds." Please revise.	Blasting at sand and gravel sites has been added to the gravel mining discussion in the hypothetical development scenario. Power will run on vertical support members (VSMs) with pipelines so overhead power lines will not be installed.
82.	Withheld	Withheld	—	68965	84	Reasonably Foreseeable Development (RFD)	56. Chapter 3; section 3.3.5, page 3-136. Marine Mammals. Pile driving is mentioned as a potential construction activity here and in Appendix F (pg. F-24), but is not described in Appendix B as a reasonably foreseeable activity. If pile driving is a reasonably foreseeable aspect of the proposed program, it should be described in Appendix B and its effects analyzed for other potentially impacted resources, for example "Fish and Aquatic Resources" and "Birds."	Pile driving has been added to the hypothetical development scenario as a reasonably foreseeable action.
83.	Peter	Stern	—	69296	69	Reasonably Foreseeable Development (RFD)	Appendix 2 B-13 is very ambiguous when it comes to sourcing water. This is further reference to water needs for ice roads and reinjection wells that doesn't do a very good job identifying good sources. Instead is lists possible sources with a poor understanding of how much water might be available in the various areas open for leasing.	Additional NEPA analysis at the project and site-specific level would assess water needs and measures to address water supply issues. The hypothetical development scenario anticipates that a seawater treatment plant and pipelines from the coast would need to be constructed. It is discussed in Section B.7.3-Development.
84.	Peter	Stern	—	69296	70	Reasonably Foreseeable Development (RFD)	B-16 acknowledges a lack of information about ground water so needs may not be met. This means sea water may have to be used. Pipelines may need to be built from the coast.	The hypothetical development scenario anticipates that a seawater treatment plant and pipelines from the coast would need to be constructed. It is discussed in Section B.7.3-Development.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
85.	Linda	Serret	—	69357	6	Reasonably Foreseeable Development (RFD)	Could you integrate a bottom line assessment of the effectiveness of the proposed lease stipulations and operating procedures (qualitative or quantitative), based on past similar projects, to help reader understand whether any of these many measures would be effective?	All stipulations and operating procedures except for measures that are specific to the Coastal Plain (e.g., setbacks from a specific river) are measures that have been used successfully at other North Slope locations. If best management practices change based on new information, operating procedures would change to reflect that. If requirements are determined to be ineffective BLM can adjust them.
86.	Jill	Nogi	Environmental Protection Agency	71634	27	Reasonably Foreseeable Development (RFD)	The discussion of the Reasonably Foreseeable Development Scenario in Appendix B states that "Current drilling technology is self-contained, so there are no reserve pits that could leak or pose an attractive nuisance to wildlife ... Using grind and inject technology, cuttings are now crushed and slurried with seawater in a ball mill, then combined with the remaining drilling muds and reinjected into confining rock formation 3,000 to 4,000 feet underground in an approved injection well (DOI 2005). This reduces the environmental impacts of disposing of drill cuttings because it avoids the need to bury cuttings onsite or haul them to a landfill." The discussion is presented with regard to the potential impacts of exploratory well drilling. Given that oil and gas infrastructure does not currently exist in the program area, we recommend that the EIS provide additional detail regarding where these wastes are anticipated to be injected during the exploration phase. For example, we recommend identifying the existing permitted underground injection wells in nearby oil fields and discussing their capacity to accept the additional waste from future projects in the Coastal Plain. In addition, we recommend including information on and analysis of impacts from hauling these wastes to offsite injection sites.	During the exploration phase cuttings would be hauled out of the Refuge. During the development phase disposal wells would drilled on well pads within the Coastal Plain so cuttings would not need to be moved offsite. At the development phase, enough would be known about the subsurface lithology for allowance (or not) of disposal wells. Disposal wells are regulated by ADEC. This information was added to the hypothetical development scenario.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
87.	Jill	Nogi	Environmental Protection Agency	71634	28	Reasonably Foreseeable Development (RFD)	We note that, with regard to field development, Appendix B only briefly references the anticipated future use of underground injection wells, stating, "The potential anchor pad is expected to have a Class I or Class II disposal well, or both, which are used to dispose of industrial wastes and fluids associated with oil and gas production, respectively." The DEIS also briefly mentions injection wells in Section 3.2.11, Solid and Hazardous Waste, stating, "Use of injection wells (Class I or Class II) in the future would be used to dispose of wastewater, produced water, spent fluids, and chemicals, as approved by the EPA, the [Alaska Oil and Gas Conservation Commission], or ADEC. Injection wells would be used to dispose of wastewater generated from the estimated field use of 2 million gallons per day. As a result, injection of wastewater reduces potential impacts on surface waters or the land by injecting wastewater deep underground into zones isolated from drinking water sources." We recommend that the EIS include additional analysis of the anticipated need for new underground injection wells to be drilled for disposal of wastes from field operations, the likely number of wells, how fluids would be transported to disposal well sites, potential impacts associated with the wells and the transportation, and how groundwater aquifers will be protected.	Further analysis of wastewater disposal wells will be discussed in the NEPA process for future development proposals. The amount of wastewater produced depends on the characteristics of petroleum reservoirs which are currently unknown.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
88.	Jill	Nogi	Environmental Protection Agency	71634	40	Reasonably Foreseeable Development (RFD)	Cumulative Impacts The DEIS includes oil and gas activities on non-federal lands among actions not included in the cumulative impacts analysis, while acknowledging that "The program area is next to State of Alaska lands and waters and contains inholdings owned by Alaska Native Corporations. Although there are no present plans to develop these non-federal lands for oil and gas, leasing in the Coastal Plain could result in exploration and development of recoverable hydrocarbons." Therefore, to the extent information is available, we continue to recommend that the EIS include a reasonably foreseeable development estimate for development on State or Alaska Native Corporation lands within or adjacent to the program area. This will provide an improved cumulative analysis of the potential future impacts on the environment from oil and gas development in the Coastal Plain, as required by NEPA.	The BLM cannot speculate on resource development of another agency or entity (i.e. create a hypothetical development scenario). The BLM can use reports that have been done for those lands to inform its own analysis and effects.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89.	Withheld	Withheld	—	72125	27	Reasonably Foreseeable Development (RFD)	Alternatives must be based on actual Coastal Plain conditions. A simple sketch of a conceptual layout of oil development facilities, as depicted in the DEIS as Figures B-1 and B-2, does not substitute for a detailed geospatial analysis of RFD scenarios that is based on actual Coastal Plain conditions. The DEIS figure pop-up describes that, "[e]ach satellite pad is connected to the central process facility by a road and pipeline. One satellite pad connects to the export pipeline to the Trans-Alaska Pipeline System. Another satellite pad connects to the seawater treatment plant located on the Arctic Ocean coast. A conceptual location for the barge landing is also shown on the figure. Facility locations and sizes are conceptual and not to scale." The BLM's hypothetical development scenario is inadequate to support effects analyses, including addressing cumulative effects and connected actions. Current geospatial analysis and mapping technology should have resulted in a highly rigorous analysis and an informative landscape display of modelling outcomes for the Leasing DEIS. The Leasing DEIS demonstrates that the BLM did not take a hard look at the alternatives.	The impacts of actual locations of potential development components will be based on proposed development facilities that will each undergo NEPA review when proposed. There is not enough information available to accurately predict development locations nor infrastructure at this time. A proposed development will face its own share of limitations depending on location including, but not limited to, encumbrances, timing, acreage and market.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
90.	Withheld	Withheld	—	72125	28	Reasonably Foreseeable Development (RFD)	RFD scenarios should reflect the lessons of the Alpine Development, while applying the knowledge to Arctic Refuge Coastal Plain conditions. As demonstrated in the following narrative, any development plan must provide for safeguards to limit the growth of infrastructure: At first, the two initial pads, their connecting road, and an airstrip totaled about 100 acres. In the next 10 years, two additional pads were added, including one connected by an additional road of more than 3 miles, plus a pipeline. The other pad is joined to the first two pads only by a pipeline; to compensate for the absence of a road, it has its own airstrip. A fifth pad inside NPR-A was completed and is connected by a new 6-mile road; mineral rights at the fifth pad are owned largely by the Arctic Slope Regional Corporation. First production from the fifth pad began in October 2015. To support construction, additional facilities for office space and dormitories were added to the main Alpine camp. Altogether, the expansion of the field was expected to add roughly 27.5 miles of gravel roads to the first 3 miles of roads and to create 1,845 acres of disturbed soils, including 316 acres of gravel mines or gravel structures. Approximately 150 miles of roads would be constructed if the field is fully developed.	In developing its hypothetical development scenario, BLM considered all past and current North Slope development, as well as advances in operational technologies, focusing on more recent developments such as those in NPR-A.
91.	Withheld	Withheld	—	72125	34	Reasonably Foreseeable Development (RFD)	Abandonment and Reclamation Comments (Section B.7.5): Reclamation is not complete until a disturb area effectually contributes to conserving fish and wildlife populations and habitats in their natural diversity. A disturb area acreage could possibly be regained against the 2,000-acre limit in 19 to 130 years and not in 2 to 5 years as stated.	The time frames cited in the EIS describe the amount of time needed to implement reclamation, not the amount of time it may take thereafter for the reclamation to be effective.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
92.	Withheld	Withheld	—	72125	39	Reasonably Foreseeable Development (RFD)	Affected Environment and Environmental Consequences Comments (Section 3.1): The BLM describes the analysis as a, “good faith effort,” however, the DEIS does not demonstrate that the agency took a hard look at the effects of the proposed action and alternatives. A “hard look” is a reasoned analysis containing quantitative or detailed qualitative information. The Conceptual Layout of a Stand-Alone Oil Development Facility sketch that is presented in the DEIS in Figures B-1 and B-2 of potential pipelines and facilities does not meet the requirement of 40 CFR § 1502.24 - Methodology and Scientific Accuracy. Instead of the sketch, geospatial modeling of roads, pipelines, facilities, and disturbance areas associated with full field development should have been presented. NEPA reviews must take a hard look at impacts that alternatives under consideration would have on the human environment if implemented. This means that there must be evidence that the agency considered all foreseeable direct, indirect, and cumulative impacts, used sound science and best available information, and made a logical, rational connection between the facts presented and the conclusions drawn. Analyzing impacts means considering how the condition of a resource would change, either negatively or positively, as a result of implementing each of the alternatives under consideration. A written impact analysis that focuses on significant issues should be included in the environmental consequences section of a NEPA document. A written impact analysis should: (1) describe the impacts that each of the alternatives under consideration would have on affected resources; (2) use quantitative data to the extent practicable; (3) discuss the importance of impacts through consideration of their context and	At the leasing stage it is unknown as to where leases will be issued, where exploration will occur, and, if oil and gas resources are discovered in economic quantities, where development would occur. Accordingly, a spatial depiction could mislead the public into assuming the developments would occur in the depicted areas.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
92. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	intensity; and (4) provide a clear, rational link between the facts presented and the conclusions drawn.	(see above)
93.	Withheld	Withheld	—	73209	3	Reasonably Foreseeable Development (RFD)	It will be at least a decade or more before any hydrocarbons from this program would be available to markets, but what will energy markets be in that timeframe? The scope of this EIS is far too limited to justify proceeding with a leasing program without knowing where the products can be marketed in a realistic timeframe. The oil and gas are not being produced for the sake of production alone, and they won't be produced if in the next several decades, there will be no markets for them.	The RFD states in the Introduction (B.2) that it assumes favorable markets. This is based on the Energy Information Administration prediction that demand for petroleum products will continue for the next several decades.
94.	Richard	Edwards	—	74281	55	Reasonably Foreseeable Development (RFD)	It is useful to stop here to highlight that the Program Area with hydrocarbon potential consists of those acres north of the Marsh Creek anticline---essentially the far western end of the Area and a narrow coastal band leading toward Kaktovik (Map page B-3). The obvious disconnect between Section 20001(c)(3)'s lease acreage figures and the actual text in the Section is blatantly apparent. Under more rational circumstances, this disconnect might be more properly addressed by an Agency truly intent on following its management principles.	Hydrocarbon potential is highest to the north of the Marsh Creek anticline. As the cited USGS documents explain, there is petroleum potential in the rest of the 1002 Area, but with a considerably lower chance of an economically viable discovery.
95.	Withheld	Withheld	—	75257	3	Reasonably Foreseeable Development (RFD)	The development of the coastal plain proposed in this EIS is projected to require a minimum of 50 years. That's 2070. This EIS does a very inadequate job of describing the projected landscape, social, economic, and global climate / north slope climate conditions projected for 2070 - despite the existence of some excellent resources for inclusion.	The timeframes listed in Table B-3 are similar to what was used for NPR-A prior to first development when it was still considered a frontier basin.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
96.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	7	Reasonably Foreseeable Development (RFD)	there are still important limitations on directional drilling that would prevent the development of significant portions of the subsurface lands under these broad restrictions. Even with advances in extended reach drilling, such techniques would not bridge the vast distances contemplated in the DEIS as a result of the proposed NSO restrictions. A deep, high pressure reservoir may only allow a horizontal reach of up to two miles, whereas a shallower depth reservoir with a normal pressure profile may support up to seven miles, depending on rock properties encountered. ⁵⁹	Horizontal drilling capability distances are based on other North Slope developments in the expected productive formations.
97.	Brook	Brisson	Trustees for Alaska	81368	1	Reasonably Foreseeable Development (RFD)	The DEIS is based on unjustified production assumptions "that economically feasible oil accumulations would be discovered in all potential areas and that multiple anchor fields (each containing at least 400 million barrels of proven producible reserves) would be discovered" (p. B-13; emphasis added; "proven producible reserves" is not defined in the DEIS). The reasoning behind the hypothetical production is not presented or explained within the DEIS. In addition, despite the reasonably foreseeable restrictions on oil and gas activities in the Arctic due to weather and wildlife, the DEIS states that production activities would continue year-round (p. B-8).	The hypothetical development scenario attempts to examine a maximum scenario for development to disclose the greatest impacts that might occur. The reasoning behind the hypothetical production is based on the number of wells and per well production from other North Slope developments. As explained in Appendix B, 400 million barrels is the minimum size needed to support the development of a central processing facility based on current information.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
98.	Brook	Brisson	Trustees for Alaska	81368	2	Reasonably Foreseeable Development (RFD)	The DEIS baseline scenario estimates two anchor fields can be developed by 2050; the first with six satellite fields, and the second with four satellite fields: - The first anchor and its satellite fields are assumed to have a combined 1 billion barrels (about 400 million barrels from the anchor field, and 100 million barrels from each satellite field) of "proven producible reserves." - "The assumption is that the second anchor field would be discovered and developed several years after the first anchor field and would have four smaller satellite fields that would be developed by 2050 and tie into its CPF" (central processing facility; p. 3-232). Production estimates should have been provided for the second anchor field and its satellite fields, but were not.	Production estimates from the second anchor field were reviewed and updated in response to this comment. The Draft EIS baseline scenario section has been changed and updated.
99.	Steven	Amstrup	Polar Bears International	81368	5	Reasonably Foreseeable Development (RFD)	Also missing is a clear statement of the recovery volume used in the Reasonably Foreseeable Development Scenario, and in other estimates throughout the DEIS. A range is repeated in the document: "The projected ultimate recovery in the Coastal Plain is estimated to be anywhere from 1.5 BBO [billion barrels of oil] to 10 BBO, based on the estimated daily production rate for the two to four main developments" (p. B-18). We found few references to a specific production estimate (3.4 BBO) (pages ES-3, 3-38, and B-1). The BLM should provide the projected recovery volume assumed for all analyses and discussions included in the DEIS.	The projected recovery is dependent on the timeline, discoveries, future economic conditions, and the number of completed and producing wells. It is too speculative to provide a specific production number. However numbers referenced from other documents are cited as written in those documents. The hypothetical development scenario has been revised to more clearly denote which estimates are from other documents.
100.	Steven	Amstrup	Polar Bears International	81368	6	Reasonably Foreseeable Development (RFD)	Unrealistic Hypothetical Timeline of Development The length of time expected to elapse between the first lease sale and production is inconsistent within the DEIS document, varying from 8 years to 16 years: - "this analysis assumes that first oil production from the first CPF would occur 10 years from the first lease sale" (p. 3-232); - "The exploration phase of each anchor field and associated satellite fields can occur over a span of 10 years ... Following	Timelines have been reviewed for consistency.

S. Public Comments and BLM Responses (Reasonably Foreseeable Development (RFD))

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
100. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	discovery, the development phase normally takes 3 to 6 years. ... The production phase can start after development of a CPF" (p. 3-232); and - "a time lag of at least 8 years is expected between the first lease sale and the beginning of production" (p. B-10).	(see above)
101.	Carolyn	Alkire	Key-Log Economics o.b.o. The Wilderness Society	81368	7	Reasonably Foreseeable Development (RFD)	the timeline for the hypothetical development scenario (Appendix B) for the Coastal Plain does not consider all likely phases and is thus unrealistically short. It does not appear to allow for the numerous potential delays that could occur given the "optimistic, aggressive" reasonably foreseeable development scenario outlined in Appendix B. A reasonable timeline is critical because all economic impact estimates rely on this assumption. The potential delays acknowledged in the DEIS are: - Additional consultations with local, state, and federal stakeholders; - Additional studies that would be required for permitting; - Delays in exploration and development due to closures of certain environmentally sensitive areas; - Reductions in surface disturbance; - Additional facilities that could be required to address limited road access to the CPFs; and - Additional infrastructure, such as bridges, that could be required to avoid environmentally sensitive areas (pages 3-237 to 3-238 and p. B-24).	Timelines were reviewed. Delays will factor in future project level NEPA documents. Using an aggressive development scenario allows for analysis of maximum impacts in order to provide maximum NEPA coverage. Impacts of development may be less than those analyzed if it occurs at a slower pace.
102.	Janet	Jorgenson	—	81671	5	Reasonably Foreseeable Development (RFD)	Hypothetical scenarios for development are given, but no hypothetical maps to help illustrate the differences between alternatives.	See Appendix A for maps of the alternatives, hypothetical maps with locations of project components are not provided because locations are highly uncertain due to limited geologic information.

S.3.31 Recreation

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Ronald	Yarnell	—	67164	1	Recreation	I see nothing in the draft EIS that states the impacts oil & gas leasing will have on mine or other outfitter's businesses. No mention is made of how many permittees will be impacted. No mention is made about how many visitors days of use will be impacted. No mention is made how much income from all these outfitters, guides, hunting guides, and other permittees will be reduced.	Section 3.4.6, Recreation, describes how changes in resource conditions would directly influence the quality of recreation experiences obtained through commercial operators and potentially diminish the ability of operators to provide clients with desired recreation experiences, resulting in fewer permitted operators and potential displacement to areas outside of the program area.
2.	Ronald	Yarnell	—	67164	2	Recreation	The figures on page 3-203, certainly do not present any kind of economic impact. I seriously question whether these figures are anywhere close to the actual number of visitors. They certainly do not ascertain the actual number of visitor days of use in the 1002 area & it's economic value. As permittees we actually have to pay a per user day fee. Certainly these records are available at the US Fish & Wildlife Refuge office in Fairbanks.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
3.	Curt	Leigh	—	69329	14	Recreation	The economic evaluation in the EIS is also deficient. It considers a very limited range of non oil development economic topics. Even though the EIS identifies a recent increase in tourism (EIS p. 3-148), it fails to project lost tourism jobs or economic activity related to tourism through the fifty year project life. Existence values, future recreational values and other passive use values were specifically excluded from any economic evaluation (EIS p. 3-239). The values of undisturbed arctic habitats, which cannot be recreated even with a substantial budget, are not considered.	Section 3.4.6, Recreation, describes how changes in resource conditions would directly influence the quality of recreation experiences obtained through commercial operators and potentially diminish the ability of operators to provide clients with desired recreation experiences, resulting in fewer permitted operators and potential displacement to areas outside of the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Megan	Williams	o.b.o. Trustees for Alaska	81368	27	Recreation	The DEIS should have assessed the economic consequences of a potential decrease in recreational use (and users) of the Coastal Plain on the local/regional economy. The document states that potential changes under all alternatives would “cumulatively impact the quantity and quality of recreation opportunities that can be offered and the recreation experience and opportunities that can be provided” (pages 3-208 to 3-209); and that there would be changes in the quality and level of access to recreation, and displacement of recreation opportunities (p. F-36). Furthermore, recreation providers would likely be negatively affected because changes in resource conditions “could lessen the viability of certain operations, resulting in fewer permitted operators, which would indirectly affect recreation by potentially reducing access to the program area via specially permitted means” (p. 3-206). According to the DEIS, there are 15 tourism-related businesses in Kaktovik alone (p. 3-228) and the Alaska Department of Labor and Workforce Development reports that leisure and hospitality industries in the North Slope Borough accounted for \$33.5 million in wage earnings in 2017. ²⁵ Although these businesses and associated wages are likely to be negatively affected by diminished recreation quality and access, the DEIS not acknowledge this. In fact, it inexplicably states that “[U]nder all alternatives, there would be an increased demand for recreation[al] use in the program area” (p. 3-208).	Section 3.4.6, Recreation, describes how changes in resource conditions would directly influence the quality of recreation experiences obtained through commercial operators and potentially diminish the ability of operators to provide clients with desired recreation experiences, resulting in fewer permitted operators and potential displacement to areas outside of the program area.
5.	Withheld	Withheld	—	70934	36	Recreation	Page 3 - 148 paragraph #5, More glaring examples of a general lack of knowledge about the Arctic Refuge. Recreational travel into the Arctic Refuge has not been based out of Kaktovik since the early 2000's when the air-taxi based in Kaktovik went out of business.	The analysis in Section 3.4.6, Recreation, has been clarified regarding chartered aircraft access at Kaktovik.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Ronald	Yarnell	—	67164	5	Recreation	I see nowhere in the draft EIS that states the economic impacts oil leasing & development will have on recreational activity in Kaktovik, Arctic Village, Fairbanks, Anchorage & Alaska in general.	The Recreation analysis focuses on the potential impacts to recreational activities resulting from oil and gas leasing within the program area. Economic impacts are described in Section 3.4.10 of the EIS.
7.	Ronald	Yarnell	—	67164	7	Recreation	the only river a traveler could float through wilderness to the Arctic Ocean will be the Kongakut River. The loss of this uniqueness needs to be discussed in the EIS. The Canning, Hulahula, Okpilik, Jago, & Aichilik Rivers all support rafters that paddle out of the mountains, across the coastal plain all the way to the Arctic Ocean. Industrial development within the 1002 area will make these trips highly unlikely because clients don't come here to float through industrial areas. Likewise, the smaller rivers including the Tamayariak, Katakturuk, Marsh Creek, & Sadlerochit also flow across the 1002 area. These river corridors provide routes for pack rafters & backpackers across the coastal plain all the way to the Arctic Ocean. No one will want to hike or pack raft through these areas with oil wells, pipeline, airstrips, gravel pits & other forms of development.	Additional discussion of the potential impacts on river-related recreational experiences, and the shift in recreational use toward the Kongakut River, is included in the analysis.
8.	Withheld	Withheld	—	68965	90	Recreation	63. Chapter 3; section 3.4.6, pages 3-202 to 3-209. Recreation. Along the same lines as my previous comment, the effects analysis should consider the degree to which the proposed program may shift recreational use toward the Kongakut River. How will visitor experiences on the Kongakut be affected by more concentrated use?	Additional discussion of the potential impacts on river-related recreational experiences, and the shift in recreational use toward the Kongakut River, is included in the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Withheld	Withheld	—	68965	92	Recreation	65. Chapter 3; section 3.4.6, page 3-207. Recreation. Four-mile NSO setbacks from rivers, such as the Canning and Hulahula Rivers, would maintain recreation opportunities and avoid the displacement of visitors in those popular recreation corridors. The potential for user conflicts in river corridors would be the same as Alternative A. This is because the wide corridor setbacks would support visitor dispersion in the corridor without being constrained by development. Where unobstructed by topography or vegetation, infrastructure and vehicle traffic would be visible from the rivers. This would alter the recreation setting and could contribute to diminished user experiences. Where vegetation and topography provide screening, impacts would be nearly the same as under Alternative A. The exception would be at nighttime, when artificial lighting skyward of any new facilities would be visible, which would affect recreation, as described under Impacts Common to All Action Alternatives, above. A narrower 1-mile setback along the Jago River would result in the same impacts as Alternative B. Outside the river corridor setbacks, the potential for displacing visitors and limiting access would be the same as Alternative B and as described under Impacts Common to All Action Alternatives, above. These two paragraphs appear to be contradictory. The first paragraph seems to say Alternative C would result in no effects to recreation, with no data of meaningful narrative support for this assertion. The second paragraph provides a more reasonable description of likely impacts, in my opinion. Please reconcile these seemingly contradictory paragraphs.	The four mile setbacks would allow for recreation to be dispersed along the Canning and Hulahula Rivers. The 1 mile setback, specifically on the Jago River, may lead to crowding of recreation, potentially decreasing the quality. No change was made to the analysis.
10.	Withheld	Withheld	—	70934	42	Recreation	Page 3-203 paragraph #2 final sentence, There is almost no coastal power boat access for recreation and boats do not ascend any of the rivers mentioned.	The analysis has been clarified regarding coastal power boat access for recreation.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Withheld	Withheld	—	70934	43	Recreation	Page 3-203 paragraph #3 This is totally inaccurate. Kaktovik is a rarely used access point for chartered aircraft. The vast majority of chartered aircraft come from south of the Brooks Range via Arctic Village, Fort Yukon, or Coldfoot. A few visitors use the Dalton Highway and fly from Happy Valley. Fewer still transit through Kaktovik.	The analysis has been clarified regarding chartered aircraft access at Kaktovik.
12.	Withheld	Withheld	—	70934	51	Recreation	Page 3- 209 second paragraph, Public Access along with access for qualified subsistence users needs to be addressed prior to leasing. Many of the assumptions being made in this document assume that there will be public access to leased areas and that there will be public access to roads in the oil fields. There is no precedent for this on the North-slope	The analysis has been clarified that new roads associated with private industry development will be available to private industry access and subsistence use only.
13.	Dr. Julianne Lutz	Warren	—	74344	8	Recreation	Zero info about visitor use-how can the multiple values of this place incl by visitors be respected if they are not even understood?	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.

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14.	Natalie	Dawson	—	81061	5	Recreation	Visitor use: unguided trips not recorded, river use in western part of refuge (including coastal plain) impacted by water flows, viewshed analyses and how many people would this impact? "there is no information about people who visit the refuge without using commercial services or about what activities they participate in; update visitor use surveys for 1002 area to include unguided trips, and updated information (limited information since 2017 and even that information is restricted); Viewscape baseline study (including visible pollution plume resulting from air quality affecting viewscape) to document visual resource conditions and potential future changes to existing undeveloped viewshed; soundscape baseline study to document auditory resource conditions and potential future changes to existing natural sound environment; night sky baseline study to document auroral, stargazing, astronomical resource condition; require air transporters to obtain primary visitor activity by personal trip; voluntarily registration system for unguided, non-commercial transport.	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.
15.	—	—	Alaska Department of Natural Resources	94102	26	Recreation	2 Executive Summary, ES-5, Paragraph 1 Missing data source for projections in recreational use The last sentence in paragraph one on this page notes that "With expected increases in recreation, coupled with decreased access to recreation in areas, users of the Coastal Plain would be likely to experience impacts from future post-lease development." It is not clear where this forecast of an increase in recreation came from. Please cite to a source or a location elsewhere in the document.	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.

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16.	Tim	Whitehouse	PEER	95601	99	Recreation	Effects of highest concern on visitor opportunities and experiences include: ? Changes in opportunities for immersion in the area's wild character; its freedom from the human intent to control, alter, or manipulate its components and ecological and evolutionary processes. ? Changes to desirability of the destination (visitor displacement resulting from new user types; and/or increased visitation by new user types). ? Changes to the timing or availability of access for recreation (both consumptive and nonconsumptive uses). ? Changes to the distribution of visitors, possibly leading to crowding. ? The emergence of new behaviors, modes of travel, or activity types, possibly leading to social conflicts. ? Reduced scenic opportunities due to changes to apparent naturalness by the addition of man-made structures. ? Reduced auditory quality due to addition of man-made noise to the natural soundscape. ? Reduced quality of night sky visibility due to atmospheric light pollution. ? Reduced opportunity for solitude. Solitude coincides with the Refuge CCP where it is defined as being free of the reminders of society, its inventions, and conventions. Solitude is greater than just being isolated from other people. ? Reduced opportunities for immersion in undeveloped area void of permanent structures or modern human occupation. Changes to levels of visitor satisfaction resulting from changes in overall quality of recreational opportunities. ? Changes to the quality of visitor experience could affect demand for commercial services among the majority of guide and air transporting businesses. ? Changes to the frequency of commercially-supported services may further limit managers' capacity to deliver quality visitor opportunities, since managers rely heavily upon the interests of commercial service providers to act as our eyes, ears, and workforce to deliver services.	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.

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17.	Tim	Whitehouse	PEER	95601	103	Recreation	There is no information about the number of people who visit the Refuge without using commercial services or about what activities they participate in.	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.
18.	Tim	Whitehouse	PEER	95601	105	Recreation	What studies/surveys need to be conducted to fill those information gaps? Please include duration (start and end), staffing and cost estimates. Ongoing efforts that could be focused or modified to meet needs: ? Evaluate existing OMB-approved FWS visitor surveys for generalized information about Alaska Region's visitation patterns and preferences (duration: XX; lead: Natalie Sexton/Debbie Steen?; cost: XX). ? Re-evaluate 2009 visitor survey data held by Neal Christensen, to identify any possible additional information about experience condition expectations of visitors, specific to the Coastal Plain (duration: 3 months after contracted; lead: Jen Reed?; cost estimate: \$10K?) ? Repeat/focus Arctic Refuge Visitor Survey to obtain current data about expectations of visitors, specific to the Coastal Plain (warning: dependent upon OMB approval) (duration: lead: XX, cost estimate: XX). ? Evaluate Refuge's raw 2010-2011 Client Use Report (CUR) data, consistent with previous data, to identify additional information specific to the Coastal Plain; and of Refuge's limited 2012-2017 CUR data (reporting requirements inconsistent with previous data). (duration of effort: 6 months; lead: Reed; cost estimate: \$3K for contracted database support).	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.

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19.	Ronald	Yarnell	—	98124	1	Recreation	The impact statement under the recreational part does mention how many people visit this area. It was like a 1,000 or 1,200 or something like that, but they don't say how many visitor days there were. I mean, how many actual days people camped on. So basically it gives a number of people who visit there, but it doesn't tell how much time they actually spent there. So I think that needs to be incorporated into the EIS.	The analysis of visitor use is based on the most accurate and readily available data. Additional data received between the Draft EIS and Final EIS is included in the analysis.
20.	Brook	Brisson	Trustees for Alaska	98270	102	Recreation	The affected environment section also includes errors, such as describing most recreation in the program area being in the Kongakut, Canning, and Hulahula River corridors.1769 In fact, the Kongakut River does not cross the Coastal Plain at all and instead flows entirely through the Mollie Beattie Wilderness from its origin in the Brooks Range to the Beaufort Sea.	The analysis has been revised for clarity. The description of th Kongakut river corridor has been removed.
21.	Brook	Brisson	Trustees for Alaska	98270	104	Recreation	Accordingly, conclusions like that on page 3-207 of the DEIS that, under Alternative C, "[f]our-mile NSO setbacks from rivers, such as the Canning and Hulahula Rivers, would maintain recreational opportunities and avoid the displacement of visitors in those popular recreation corridors" are unsupported. Moreover, that statement in the recreational impacts analysis is inconsistent with the articulation of Stipulation 1 in Chapter 2, Table 2-2, which lists the setback as two, not four, miles from either the edge of the active floodplain (for the Canning and Hulahula) or the bank's ordinary high-water mark (for the Okpilak) under Alternative C.	Analysis has been revised for clarity to identify that the buffer will be two miles from either edge of the active floodplain.

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22.	Brook	Brisson	Trustees for Alaska	98270	108	Recreation	Finally, BLM's cumulative impacts analysis includes confusing and unsupported statements. For instance, it claims that "[u]nder all alternatives, there would be an increased demand for recreation use in the program area."1775 It is unclear what support, if any, BLM has for this statement, especially where significant degradation of recreational settings can be expected under the action alternatives, which in turn would be expected to lead to decreases in wilderness recreation use and associated economic benefits.	Analysis has been clarified to identify that while demand for recreation is expected to increase in the program, the values that contribute to positive recreational outcomes may change due to future leasing and development that may reduce demand. Increased demand is driven by the unique characteristics of the Coastal Plain.
23.	Withheld	Withheld	—	56413	2	Recreation	The visual, recreational, noise, wildlife and light impacts presented for recreational and wildlife river corridors are significant but are only lightly treated in the discussion of differences among alternatives.	The discussion of how minimal changes to the physical setting may have disproportionately large impacts on user experiences on recreation and along river corridors is described in 3-204 in Impacts Common to All Alternatives
24.	Withheld	Withheld	—	57233	1	Recreation	One item not even considered in the proposal – at this time the public lands of the wildlife refuge are open to the public. If oil companies are given rights to the area, no member of the general public will be allowed to enter the area without complicated permitting and security clearance .	In the second paragraph on page 3-206, the EIS contains a discussion of how lease sales that result in future development can physically displace recreationists.
25.	Martha	Raynolds	—	67039	15	Recreation	The EIS states that recreational use will increase with oil & gas development. This is not true based on the example of Prudhoe Bay. The only "recreation" in the Prudhoe Bay is the oil company bus tours, where (if you've submitted all the proper ID in advance) they drive you through the oilfield for ½ hour and allow you a short stop at the Arctic Ocean. Boaters on the Sagavanirktok River are not even allowed to go all the way to the coast, because there is no way they can get picked up there.	On page 3-208, the EIS states that recreational demand will increase within the program area. Impacts Common to All Alternatives discusses how recreational quality may decrease as a result of leasing.

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26.	Ronald	Yarnell	—	67164	5	Recreation	I see nowhere in the draft EIS that states the economic impacts oil leasing & development will have on recreational activity in Kaktovik, Arctic Village, Fairbanks, Anchorage & Alaska in general.	The Recreation analysis focuses on the potential impacts to recreational activities resulting from leasing. Economic impacts are described in Section 3.4.10 of the EIS.
27.	Ronald	Yarnell	—	67164	7	Recreation	the only river a traveler could float through wilderness to the Arctic Ocean will be the Kongakut River. The loss of this uniqueness needs to be discussed in the EIS. The Canning, Hulahula, Okpilik, Jago, & Aichilik Rivers all support rafters that paddle out of the mountains, across the coastal plain all the way to the Arctic Ocean. Industrial development within the 1002 area will make these trips highly unlikely because clients don't come here to float through industrial areas. Likewise, the smaller rivers including the Tamayariak, Katakturuk, Marsh Creek, & Sadlerochit also flow across the 1002 area. These river corridors provide routes for pack rafters & backpackers across the coastal plain all the way to the Arctic Ocean. No one will want to hike or pack raft through these areas with oil wells, pipeline, airstrips, gravel pits & other forms of development.	The analysis throughout Section 3.4.6 describes the potential impacts of oil and gas activity on recreation opportunities and setting.
28.	Ronald	Yarnell	—	67164	8	Recreation	On page 3-204 you state that "there would be no potential direct or indirect impacts on recreation from post-lease oil and gas activities in the program area." Nothing could be farther from the truth. This shows how little the folks writing this draft EIS know about the area. Even after more than 40 years we still see the impacts from the seismic exploration activity that occurred during the early 1980s.	The commenter refers to page 3-204, which is describing Alternative A, the No Action Alternative. Under this alternative, oil and gas leasing program would not take place in the program area.

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29.	Withheld	Withheld	—	68965	89	Recreation	62. Chapter 3; section 3.4.6, pages 3-205. Recreation. Impacts Common to All Action Alternatives. Protective measures intended to limit ground disturbance and associated impacts on resources would improve [really? italics added] recreation by limiting or prohibiting surface-disturbing activities that could diminish the quality of recreation experiences, conflict with recreation opportunities, or displace visitors and subsistence users. The magnitude of potential impacts on recreation would be directly related to the type and extent of proposed lease stipulations or ROPs under each alternative. In general, maintaining or improving resource conditions increases the quality of recreation (Dorwart et al. 2009). The program area offers recreationists primitive recreation experiences, such as expedition-length float hunts and polar bear viewing, that are unique on a global scale and that depend largely on the physical setting. Visual quality contributes to the physical setting and directly influences recreationists' satisfaction with recreation in the program area. Undisturbed landscapes contribute to higher-quality recreation opportunities. Protective measures attached to leases, such as NSOs, which prevent surface disturbance and the placement of aboveground infrastructure, would eliminate [really? italics added] the potential for changes to visual quality and associated physical setting. Where aboveground development is allowed, lease stipulations that minimize the visual contrast of new development, such as by requiring design elements that complement the predominant natural features of the characteristic landscape, would reduce the intensity of visual impacts and associated change to the recreation setting. As someone who has recreated on the Coastal Plain in the program area, I find these statements to	Protective measures on leasing activities, common to all action alternatives, would improve recreational quality compared to the situations where action alternatives occur and no protective measures are in place. No change to the analysis was made.

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29. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	be gross misrepresentations of the potential impact of the program on recreation. In particular, one impact common to all action alternatives is likely to be a large decrease in the number of people who come to the Coastal Plain to recreate. In my opinion, the proposed program may nearly eliminate participation in most of the listed recreation activities. Estimating the magnitude of changes in recreational participation would be an important aspect of this effects analysis, especially given the amount of economic activity associated with each visitor to this remote destination. The statement on pg. 206, permanent infrastructure would displace all types of visitors year-round and over the long term, alludes to this effect, but does not attempt to estimate its magnitude. The North Slope is a difficult destination to reach, and given that difficulty, many people simply won't make the effort if their perception is that their experience will be diminished by the presence of oil and gas infrastructure. This is a major factor that needs to be incorporated throughout the recreation analysis, and should also be considered in the sections on Environmental Justice (3.4.5) and Economy (3.4.10).	(see above)
30.	Withheld	Withheld	—	68965	90	Recreation	63. Chapter 3; section 3.4.6, pages 3-202 to 3-209. Recreation. Along the same lines as my previous comment, the effects analysis should consider the degree to which the proposed program may shift recreational use toward the Kongakut River. How will visitor experiences on the Kongakut be affected by more concentrated use?	Additional discussion of the potential impacts on recreation experiences from this potential shift in use is included in the analysis, Section 3.4.6.

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31.	Withheld	Withheld	—	68965	92	Recreation	65. Chapter 3; section 3.4.6, page 3-207. Recreation. Four-mile NSO setbacks from rivers, such as the Canning and Hulahlula Rivers, would maintain recreation opportunities and avoid the displacement of visitors in those popular recreation corridors. The potential for user conflicts in river corridors would be the same as Alternative A. This is because the wide corridor setbacks would support visitor dispersion in the corridor without being constrained by development. Where unobstructed by topography or vegetation, infrastructure and vehicle traffic would be visible from the rivers. This would alter the recreation setting and could contribute to diminished user experiences. Where vegetation and topography provide screening, impacts would be nearly the same as under Alternative A. The exception would be at nighttime, when artificial lighting skyward of any new facilities would be visible, which would affect recreation, as described under Impacts Common to All Action Alternatives, above. A narrower 1-mile setback along the Jago River would result in the same impacts as Alternative B. Outside the river corridor setbacks, the potential for displacing visitors and limiting access would be the same as Alternative B and as described under Impacts Common to All Action Alternatives, above. These two paragraphs appear to be contradictory. The first paragraph seems to say Alternative C would result in no effects to recreation, with no data of meaningful narrative support for this assertion. The second paragraph provides a more reasonable description of likely impacts, in my opinion. Please reconcile these seemingly contradictory paragraphs.	The 4-mile setbacks would allow for recreation to be dispersed along the Canning and Hulahlula Rivers. The 1-mile setback, specifically on the Jago River, may lead to crowding of recreation, potentially decreasing the quality. No change was made to the analysis.

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32.	Withheld	Withheld	—	68965	93	Recreation	66. Chapter 3; section 3.4.6, page 3-208. Recreation cumulative effects. Under all alternatives, there would be an increased demand for recreation use in the program area. Please provide data or narrative support for this assertion.	Given the unique quality of the program area, increased recreational demand is an assumption of this analysis for all alternatives, including the No Action Alternatives. Action alternatives are analyzed with the context that recreationists desire the program area and actions may affect this desirability.
33.	Withheld	Withheld	—	70934	42	Recreation	Page 3-203 paragraph #2 final sentence, There is almost no coastal power boat access for recreation and boats do not ascend any of the rivers mentioned.	Analysis in Section 3.4.6 has been clarified to show there is almost no coastal power boat access for recreation.
34.	Withheld	Withheld	—	70934	43	Recreation	Page 3-203 paragraph #3 This is totally inaccurate. Kaktovik is a rarely used access point for chartered aircraft. The vast majority of chartered aircraft come from south of the Brooks Range via Arctic Village, Fort Yukon, or Coldfoot. A few visitors use the Dalton Highway and fly from Happy Valley. Fewer still transit through Kaktovik.	Analysis in Section 3.4.6 has been clarified to show Kaktovik is not an access point for chartered aircraft.
35.	Withheld	Withheld	—	70934	45	Recreation	Page 3-204 in regards to direct and indirect impacts to recreation, Potential impacts on guided recreation would also result from a change in perception about "Wilderness". Regardless of changes on the ground, if there is any development of oil and gas within the Arctic Refuge, the public perception and outfitters/ guides ability to market the Refuge as the "last great wilderness" will be impacted in a catastrophic way. Development in the Arctic Refuge will negatively affect recreation and tourism even on the Kongakut which is outside the program area. Right or wrong, people will think that the entire refuge is an industrial zone if any development occurs.	The analysis of the Recreation section specifically looks at how recreation will be affected within the program area. No change has been made to the analysis.
36.	Withheld	Withheld	—	70934	46	Recreation	As discussed in other sections, oil development is likely to have a negative effect on denning success. Should development cause the PHC to decrease in numbers this could also negatively affect tourism in the area. These impacts need to be quantified and considered.	Potential impacts on denning are described under each Alternative. The analysis has been conducted using the most readily available data.

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37.	Withheld	Withheld	—	70934	47	Recreation	Page 3- 205 in regards to artificial lighting, There should also be analysis of gas flaring which has substantially greater impacts than lighting.	The analysis has been clarified to account for potential impacts from gas flaring. See also the analysis in the Visual Resources section.
38.	Withheld	Withheld	—	70934	48	Recreation	Page 3-207 in regards to visual setbacks in final paragraph, The assumption that a 4 mile setback is the same as no development on user experience is not accurate. 4 miles is still within the viewshed of these rivers and recreationists hike beyond the floodplain of all these rivers. 4 miles would not hide development nor prevent noise from activities from diminishing visitor experience.	The referenced paragraph describes how recreation opportunities would be maintained in the setback areas and that the potential for user conflicts would be the same as Alternative A.
39.	Withheld	Withheld	—	70934	50	Recreation	Page 3-208 final paragraph makes an absurd assumption about increased demand for recreation. This is ludicrous. Visitors to the Arctic Refuge want wilderness! Demand for recreation in the Arctic Refuge will dramatically decline if there is development on the Coastal Plain. One example of how important solitude wilderness values are to visitors is the Sagavanirktok River. It presents an ideal opportunity for recreational activities with fun rafting, great hiking and good wildlife viewing. In 20 years of guiding in Arctic Alaska I have not once had a request to guide anyone on that river. Why? Because of its proximity to the haul-road.	Given the unique quality of the program area, increased recreational demand is an assumption of this analysis for all alternatives, including the No Action Alternative. Please see Section 3.4.7, Special Designations to see impacts on Wilderness Characteristics.
40.	Withheld	Withheld	—	70934	51	Recreation	Page 3- 209 second paragraph, Public Access along with access for qualified subsistence users needs to be addressed prior to leasing. Many of the assumptions being made in this document assume that there will be public access to leased areas and that there will be public access to roads in the oil fields. There is no precedent for this on the North-slope	The analysis clarifies that new roads associated with private industry development will be available to private industry access and subsistence use only.
41.	Withheld	Withheld	—	70934	51	Recreation	Page 3-225 references the availability of new roads for non-motorized public use, What could this possibly mean? Will industry really allow the public to bicycle along oil-field roads?	The analysis clarifies that new roads associated with private industry development will be available to private industry access and subsistence use only.

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42.	Withheld	Withheld	—	70934	51	Recreation	Page 3-243 paragraph #2 adds to the conflicting information about public access. These issues must be clarified.	The analysis clarifies that new roads associated with private industry development will be available to private industry access and subsistence use only.
43.	Dr. Julianne Lutz	Warren	—	74344	8	Recreation	Zero info about visitor use-how can the multiple values of this place incl by visitors be respected if they are not even understood?	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
44.	Withheld	Withheld	—	75137	2	Recreation	Wilderness and recreational value – These are two of the primary purposes for the establishment of the Refuge. Dr. Stuart Smith conducted a GIS analysis of the visual impact of development and finds that, “the visual impacts of coastal plain development would be significant and wide-ranging.” For example, “oil and gas development activity across a vast majority (88%) of the 1002 Area would potentially be visible to people rafting six of its major rivers, even when structures as low as 15m are in place.” Further, from high points within the federally designated Wilderness portion of the refuge, over 99% of the coastal plain and any development thereon will be visible. Source: http://truenorthgis.net/pages/coastal_plain_eis.html	The analysis has been revised to clarify potential impacts on the recreation setting from oil and gas development especially when viewed from elevated vantage points.

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45.	Natalie	Dawson	—	81061	5	Recreation	Visitor use: unguided trips not recorded, river use in western part of refuge (including coastal plain) impacted by water flows, viewshed analyses and how many people would this impact? "there is no information about people who visit the refuge without using commercial services or about what activities they participate in; update visitor use surveys for 1002 area to include unguided trips, and updated information (limited information since 2017 and even that information is restricted); Viewscape baseline study (including visible pollution plume resulting from air quality affecting viewscape) to document visual resource conditions and potential future changes to existing undeveloped viewshed; soundscape baseline study to document auditory resource conditions and potential future changes to existing natural sound environment; night sky baseline study to document auroral, stargazing, astronomical resource condition; require air transporters to obtain primary visitor activity by personal trip; voluntarily registration system for unguided, non-commercial transport.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
46.	—	—	Alaska Department of Natural Resources	94102	26	Recreation	2 Executive Summary, ES-5, Paragraph 1 Missing data source for projections in recreational use The last sentence in paragraph one on this page notes that "With expected increases in recreation, coupled with decreased access to recreation in areas, users of the Coastal Plain would be likely to experience impacts from future post-lease development." It is not clear where this forecast of an increase in recreation came from. Please cite to a source or a location elsewhere in the document.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.

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47.	William	Edwards	—	94530	4	Recreation	We went through a similar process with the opening and development of Prudhoe Bay. What has Prudhoe Bay done to access? I can't tell by reading this DEIS. I do know I can't go walk around Prudhoe Bay. Where exactly can I walk around ANWR if it turns into an oil field? I can't tell by reading this DEIS.	The analysis clarifies that impacts on access will depend on location and level of development within the Coastal Plain. New roads associated with private industry development will only be available to private industry access and subsistence use only.
48.	William	Edwards	—	94530	5	Recreation	Right now, today, I can go anywhere I want in the Refuge. If the coastal plain turns into an oil field I won't be able to do that. That is an impact. Simply saying there are potential access concerns is not enough.	The analysis clarifies that impacts on access will depend on location and level of development within the Coastal Plain. Analysis will also identify the change in access depending on location and level of development as an impact.
49.	Withheld	Withheld	—	94593	7	Recreation	The EIS does not sufficiently study the full suite of recreational use of the area including wilderness trips, hiking, hunting, and paddling.	The Draft EIS includes analysis of potential impacts on recreation opportunities and experiences, including those for guided trips, hiking, hunting, and paddling.

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50.	Tim	Whitehouse	PEER	95601	99	Recreation	Effects of highest concern on visitor opportunities and experiences include: ? Changes in opportunities for immersion in the area's wild character; its freedom from the human intent to control, alter, or manipulate its components and ecological and evolutionary processes. ? Changes to desirability of the destination (visitor displacement resulting from new user types; and/or increased visitation by new user types). ? Changes to the timing or availability of access for recreation (both consumptive and nonconsumptive uses). ? Changes to the distribution of visitors, possibly leading to crowding. ? The emergence of new behaviors, modes of travel, or activity types, possibly leading to social conflicts. ? Reduced scenic opportunities due to changes to apparent naturalness by the addition of man-made structures. ? Reduced auditory quality due to addition of man-made noise to the natural soundscape. ? Reduced quality of night sky visibility due to atmospheric light pollution. ? Reduced opportunity for solitude. Solitude coincides with the Refuge CCP where it is defined as being free of the reminders of society, its inventions, and conventions. Solitude is greater than just being isolated from other people. ? Reduced opportunities for immersion in undeveloped area void of permanent structures or modern human occupation. Changes to levels of visitor satisfaction resulting from changes in overall quality of recreational opportunities. ? Changes to the quality of visitor experience could affect demand for commercial services among the majority of guide and air transporting businesses. ? Changes to the frequency of commercially-supported services may further limit managers' capacity to deliver quality visitor opportunities, since managers rely heavily upon the interests of commercial service providers to act as our eyes, ears, and workforce to deliver services.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.

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51.	Tim	Whitehouse	PEER	95601	101	Recreation	What are key information gaps? ? Baseline information on most of the concerns listed above as "Effects of highest concern on use opportunities and experiences." ? River floating, one of the main river activities, requires adequate flow. There is limited information about the Refuge's most-visited rivers.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
52.	Tim	Whitehouse	PEER	95601	102	Recreation	Fishing is a secondary activity enjoyed by many visitors who float the Refuge's rivers; the extent, to which fishing on the Canning and Hulahula Rivers occurs, among other Coastal Plain destinations, is unknown.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
53.	Tim	Whitehouse	PEER	95601	103	Recreation	There is no information about the number of people who visit the Refuge without using commercial services or about what activities they participate in.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
54.	Tim	Whitehouse	PEER	95601	104	Recreation	Client Use Reporting (CUR) by commercial air transporters does not provide consistent data about transported visitors' specific access areas and no data is requested for egress areas; therefore, there is no trip length data available from reports. CUR also does not include visitor's primary activity.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.

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55.	Tim	Whitehouse	PEER	95601	105	Recreation	What studies/surveys need to be conducted to fill those information gaps? Please include duration (start and end), staffing and cost estimates. Ongoing efforts that could be focused or modified to meet needs: ? Evaluate existing OMB-approved FWS visitor surveys for generalized information about Alaska Region's visitation patterns and preferences (duration: XX; lead: Natalie Sexton/Debbie Steen?; cost: XX). ? Re-evaluate 2009 visitor survey data held by Neal Christensen, to identify any possible additional information about experience condition expectations of visitors, specific to the Coastal Plain (duration: 3 months after contracted; lead: Jen Reed?; cost estimate: \$10K?) ? Repeat/focus Arctic Refuge Visitor Survey to obtain current data about expectations of visitors, specific to the Coastal Plain (warning: dependent upon OMB approval) (duration: lead: XX, cost estimate: XX). ? Evaluate Refuge's raw 2010-2011 Client Use Report (CUR) data, consistent with previous data, to identify additional information specific to the Coastal Plain; and of Refuge's limited 2012-2017 CUR data (reporting requirements inconsistent with previous data). (duration of effort: 6 months; lead: Reed; cost estimate: \$3K for contracted database support).	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Withheld	Withheld	—	97253	8	Recreation	It assumes that nearly all users fly into the Refuge on chartered flights. This is not true. It is common for visitors to hike into the Refuge from Arctic Village, or other access points, using only scheduled commercial flights, and to reach the Coastal Plain by hiking, skiing, and/or floating. The EIS recognizes that river use is a common activity that will likely be disturbed by the activities that follow lease sales, but the EIS does not clearly state whether these activities will be possible at all. With the majority of the Coastal Plain disturbed by gravel pits, landing strips, drilling, private roads, and other industrial development, will the public even be allowed to move through these areas?	The analysis identifies that certain activities will have reduced opportunities or be precluded depending on the location and level of development.
57.	Withheld	Withheld	—	97253	9	Recreation	The EIS also seems to assume that vegetation along rivers could protect views and recreation opportunities in some cases. Vegetation along the rivers in the Arctic, however, is short, scrubby brush that is unlikely to protect any views.	The analysis clarifies to account for the limited visual mitigation provided by vegetation along rivers.
58.	—	—	United States Fish and Wildlife Service	97942	15	Recreation	Arctic Refuge Special Use Permits authorize private businesses to operate commercial hunting, fishing, recreation, polar bear viewing, and general visitor access to the 1002 coastal plain area. All alternatives should address impacts to the operations of these private businesses and their continued viability.	This analysis looks at the impacts of recreational activities, not the impacts of the recreation industry.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	—	—	United States Fish and Wildlife Service	97942	243	Recreation	Section 3.4.6: Preservation of recreational hunting, fishing, hiking and boating values and opportunities is an original purpose of the Arctic Refuge and is continued under ANILCA. The majority of visitors to the Refuge recreate within the project area. Recreational access and prohibitions before, during, and after leasing and surface activity (where people can/cannot expect to be able to go, and what they expect to be able to do/not do) is not adequately addressed for Alternatives B-D, though Alternative D minimizes indirect and cumulative effects upon visitor experiences. The EIS should further explain how recreational access before, during and after leasing will be addressed under each of the Alternatives.	The Draft EIS Section 3.4.6 describes the potential impacts on recreation for all phases of oil and gas development (leasing, exploration, production and reclamation).
60.	Ronald	Yarnell	—	98124	1	Recreation	The impact statement under the recreational part does mention how many people visit this area. It was like a 1,000 or 1,200 or something like that, but they don't say how many visitor days there were. I mean, how many actual days people camped on. So basically it gives a number of people who visit there, but it doesn't tell how much time they actually spent there. So I think that needs to be incorporated into the EIS.	The analysis is based on the most accurate and readily available data. Additional data received between Draft EIS and Final EIS is included in the analysis.
61.	Brook	Brisson	Trustees for Alaska	98270	102	Recreation	The affected environment section also includes errors, such as describing most recreation in the program area being in the Kongakut, Canning, and Hulahula River corridors.1769 In fact, the Kongakut River does not cross the Coastal Plain at all and instead flows entirely through the Mollie Beattie Wilderness from its origin in the Brooks Range to the Beaufort Sea.	The analysis has been revised for clarity. The description of the Kongakut River corridor has been removed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Brook	Brisson	Trustees for Alaska	98270	103	Recreation	As described below, BLM cannot, however, analyze the scope and extent of the impacts to recreational settings and opportunities absent a more robust analysis on visual impacts, including the type of visibility analysis described in that section and included in Appendix D (Stuart Smith, Ph.D, Comments on Draft EIS for Coastal Plain Oil and Gas Leasing Program (Jan. 11, 2019). Such an analysis demonstrates, for instance, that even the larger NSO buffers around certain rivers under Alternatives C and D are completely ineffective at preventing or significantly mitigating visual impacts: Map Explanation: Visibility surfaces for six major rivers along the Coastal Plain of the Arctic National Wildlife Refuge and corresponding no surface occupancy setback buffers under Alternative D2 (Alt D2). Visibility surfaces were obtained from Stuart Smith at True North GIS and indicate how tall a structure could be in a given location before becoming visible to a person traveling along the indicated river. The setback buffers from Alternative D2 were used as these present the largest setbacks in the DEIS. The resulting maps show that even these largest buffers are inadequate to mitigate visual impacts to recreationalists as even small structures (? 15 m) beyond these setbacks would be visible to people floating the indicated rivers. 1770 DEIS at 3-204-3-205. - MAPS - Accordingly, conclusions like that on page 3-207 of the DEIS that, under Alternative C, "[f]our-mile NSO setbacks from rivers, such as the Canning and Hulahula Rivers, would maintain recreational opportunities and avoid the displacement of visitors in those popular recreation corridors" are unsupported.	The analysis has been revised to clarify potential impacts on the recreation setting from oil and gas development even when viewed from a long distance.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Brook	Brisson	Trustees for Alaska	98270	104	Recreation	Accordingly, conclusions like that on page 3-207 of the DEIS that, under Alternative C, "[f]our-mile NSO setbacks from rivers, such as the Canning and Hulahula Rivers, would maintain recreational opportunities and avoid the displacement of visitors in those popular recreation corridors" are unsupported. Moreover, that statement in the recreational impacts analysis is inconsistent with the articulation of Stipulation 1 in Chapter 2, Table 2-2, which lists the setback as two, not four, miles from either the edge of the active floodplain (for the Canning and Hulahula) or the bank's ordinary high-water mark (for the Okpilak) under Alternative C.	Analysis has been revised for clarity to identify that the buffer will be two miles from either edge of the active floodplain.
64.	Brook	Brisson	Trustees for Alaska	98270	105	Recreation	Other components of the analysis of visual impacts as they pertain to recreation are also incomplete. For instance, the DEIS acknowledges the importance of night sky conditions to recreation settings and user experiences and the adverse impacts associated with artificial light, but then attempts to discount those impacts by stating that they will primarily occur during winter and spring and so will affect fewer visitors and that unspecified protective measures may reduce light pollution. ¹⁷⁷¹ As with other visual impacts, the DEIS includes no information about the reasonably foreseeable scope or extent of light pollution.	The analysis adequately describes the potential impacts from artificial light at night on the recreation setting.
65.	Brook	Brisson	Trustees for Alaska	98270	108	Recreation	Finally, BLM's cumulative impacts analysis includes confusing and unsupported statements. For instance, it claims that "[u]nder all alternatives, there would be an increased demand for recreation use in the program area." ¹⁷⁷⁵ It is unclear what support, if any, BLM has for this statement, especially where significant degradation of recreational settings can be expected under the action alternatives, which in turn would be expected to lead to decreases in wilderness recreation use and associated economic benefits.	The analysis has been revised for clarity. While demand for recreation is expected to increase within the program area, the values that contributed to positive recreational outcomes may change due to future leasing and development that may reduce demand.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Brook	Brisson	Trustees for Alaska	98270	109	Recreation	The cumulative impacts analysis also states that "[v]isitors displaced from certain areas because of oil and gas activity could choose alternate locations in the program area to recreate."1776 This statement is also unsupported and contrary to the record, which demonstrates that the visual impacts of oil and gas development will likely extend across most of the Coastal Plain, regardless of where infrastructure is located.1777 Moreover, the narrow geography of the Coastal Plain and established locations of the river corridors on which most recreation depends means that visitors cannot simply relocate. To the extent that BLM is assuming visitors would tend to not visit or recreate on the Coastal Plain as a result of oil and gas development, but would instead concentrate in other areas, the agency must analyze the impacts that could occur. The concentration of visitors in an area can be highly impactful both to the ecosystem and to the users. The Kongakut River is already experiencing some of these visitor pressures and it has posed management challenges for FWS.1778	User conflicts and concentrations are discussed in Impacts Common to All Alternatives.

S.3.32 Relationship Between Local Short-Term Uses and Long-Term Productivity

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	72125	48	Relationship Between Local Short-Term Uses and Long-Term Productivity	Relationship between Local Short-Term Uses and Long-Term Productivity Comments: Oil and gas development as described in Alternatives B, C, D1, and D2 would materially interfere with providing for the Arctic Refuge purposes of (1) conserving fish and wildlife populations and habitats in their natural diversity and (2) ensuring to the maximum extent practicable and in a manner consistent with the purposes of conserving fish and wildlife populations and habitats, water quality and necessary water quantity within the refuge. Alternatives B, C, D1, and D2 allow for long-term oil and gas production activities that would result in significant short and long-term negative impacts to the surface resources of the Arctic Refuge Coastal Plain. These alternatives must be dropped from further consideration.	All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to Section 1.2.

S.3.33 Request for Information

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Robin	Stebbins	—	83751	11	Requests for Information	The link to the GMT2 SEIS at https://www.blm.gov/programs/energy-andminerals/oil-and-gas/about/alaska/NPR-A is broken. This document is frequently referred to in the DEIS, and access to it through the BLM web site is nonfunctional.	The BLM's GMT2 SEIS is available online via the project's ePlanning website.
2.	Margi	Dashevsky	—	98093	3	Requests for Information	Hard copies of the Draft Environmental Impact Statement must be more readily available. Online documents are not enough. They do not provide adequate access to information to those with poor to no Internet access. Hard copies must be made available.	Hard copies were made available upon request. They are also available in BLM Alaska Public Rooms in Anchorage and Fairbanks, as well as at the Alaska Resources Library and Information Services at the University of Alaska Anchorage Campus.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Hillary	Junglas	—	62777	1	Request Documents or Info	My name is Hillary Junglas and I am currently researching social impacts that drilling in Section 1002 may have. Is there any way to access the comments and records of public meetings that I can review as data inputs for potential social impacts? Is there anyone with an expert understanding of what social impacts drilling in this region would have? I am hoping to understand social impacts on everyone from the Gwich'in people, the oil and gas employees stationed for drilling and developing the land for drilling, as well as Alaskan citizens who receive payment as a result of oil production in their state.	Comments and records of public meetings are available on the Coastal Plain EIS ePlanning website.

S.3.34 Sand and Gravel Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Gregg	Spindler	—	45493	11	Sand and Gravel Resources	If all 2000 acres became a 36 foot wide gravel roadway, it would be 455 miles in length. However much of the 2000 acres will be reserved for drilling pads and staging areas. Let it suffice to say that hundreds of miles of gravel roads will be constructed, regardless of the alternative and require extraction of millions of cubic yards of sand and gravel from hundreds of pits.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
2.	Withheld	Withheld	—	68965	63	Sand and Gravel Resources	33. Chapter 3; section 3.2.9, pages 3-49 to 3-50. Sand and Gravel Resources. The estimated acreage of impact here appears only to account for the pits (pg. 3-49 to 3-50), and does not include access roads and staging/stockpiling areas. Please refine this estimate to include all impacts associated with sand and gravel mining.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines. Section 3.2.9 has been updated to reference the revised Section 1.9.1.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Peter	Stern	—	69296	22	Sand and Gravel Resources	Pages 3-49 3-50 Section 3.2.9 Impacts Common to All Alternatives acknowledges gravel mines that may or may not be remediated can result in altered drainage issues. No standards for remediation are mentioned.	Reclamation will be based on approved mining and reclamation plans, material extraction methods, mine location, and material/permafrost composition. Additional discussion provided regarding reclamation added to Section 3.2.9.
4.	Richard	Edwards	—	74281	8	Sand and Gravel Resources	BLM's exclusion also conveniently allows the Agency to minimize attention to the fact that "reclamation" of gravel mine sites in this severe environment is nearly impossible, since most of such sites will irreversibly revert to the equivalent of man-made water reservoirs, triggering a number of unmitigable negative effects (page 3-57). In fact, the Draft acknowledges that gravel removal represents an on-site resource commitment that cannot be reversed or recovered. In Section 3.7 we find that one of the irreversible and irretrievable commitments of resources includes (page 3-248): "Ground disturbance and permanent change resulting from gravel removal."	Reclamation will be required by each site specific mining and reclamation plan.
5.	Sherry	Lewis	—	74288	2	Sand and Gravel Resources	Where are you going to get the necessary gravel without destroying the streams?	Material sources at/near streams and rivers are used because the material is favorable and these are dynamic systems that self-replenish; with proper mining procedures can reclaimed and banks restored. It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site specific impacts.

S. Public Comments and BLM Responses (Sand and Gravel Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Mark	Jorgenson	—	94411	1	Sand and Gravel Resources	The DEIS does not adequately assess impacts of gravel mines. The DEIS states that the surface area of the gravel mines would total approximately 300 acres for each action alternative (not included in the 2,000-acre limit on surface disturbance), but gravel mines are not considered a “surface disturbance”. This is certainly a political statement inherent in the Tax Act and has no scientific basis.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.
7.	Withheld	Withheld	—	96867	1	Sand and Gravel Resources	Since the 2000 acre limit is going to move around, how many gravel pits will there be? Provide an accurate count.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines. Appendix B describes the amount of gravel and size of gravel mines needed for the RFD. It is not possible to determine the number of mines at this leasing stage. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.

S. Public Comments and BLM Responses (Sand and Gravel Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Katherine	Trisolini	—	98002	3	Sand and Gravel Resources	Instead of considering an alternative that minimizes total surface area disturbance, the EIS includes only alternatives that include the maximum area permitted by Congress to be disturbed. [DEIS 3-26 ("All the action alternatives assume a surface disturbance are of approximately 2,000 acres from future oil and gas exploration, development and production, not including the gravel pits.") The EIS makes that outrageous assumption that Congress' direction to develop an oil and gas leasing program that disturbs a maximum of 2000 surface acres somehow also somehow incorporates authorization to disturb another 300 or more acres with gravel mining. Because the Bureau refuses to include these activities within the 2000 surface acre limit and describes the 300 acres as an "estimate," the DEIS appears to presume that Congress has authorized an unlimited number of acres to be disturbed by gravel mining within this pristine area. (DEIS 3-26). Nothing in the Act provides for this additional surface disturbance. As acknowledged by the DEIS, gravel pits remaining after extraction would typically not be completely backfilled, thus leading to permanent changes on physiography.	Section 1.9.1 has been revised to describe the production and support facilities that are included in the 2,000-acre limit, which now includes gravel mines.

S.3.35 Seismic Testing

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Donald	Walker	—	68	27	Seismic Testing	Water tables are near to the surface even on slopes over 5%. A naturally uneven permafrost table that is close to the tundra surface often acts as a barrier to down-hill water drainage. Small meso- and micro-topographic differences affect a wide range of environmental factors that raise serious concerns about the overall sensitivity and response of the landscape to 3D-seismic surveys. How will the perched wetlands of the 1002 Area, separated by only decimeters to meters, be affected by a gridwork of shallow seismic trails, centimeters to decimeters deep? Will this lead to new surface drainage networks that will effectively drain these wetlands and therefore change this habitat? Are the criteria and stipulations used for determining significant impacts in NPR-A and flatter portions of the Arctic Coastal Plain west of ANWR suitable in the much different landscapes of the 1002 Area? We have seen no studies addressing these concerns about potentially serious impacts.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
2.	Donald	Walker	—	68	75	Seismic Testing	Applying similar approaches to previously authorized seismic work, particularly in terrain similar to the 1002 Area, would help establish the necessary rigorous baseline of information for evaluating seismic work in the 1002 Area. 3D-seismic sensitivity maps and models are needed, based on detailed knowledge and maps of surficial geomorphology, microtopography, spatial and temporal variation of snow and ground ice, and projections of the effects of climate change on snow, permafrost, hydrology, and vegetation.	Site-specific NEPA analysis would be done for any proposed seismic explorations. This information is not essential to making a reasoned choice among alternatives for this Leasing EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Donald	Walker	—	68	78	Seismic Testing	We conclude that there will likely be significant, extensive, and long-lasting direct, indirect, and cumulative impacts of 3D-seismic to the microtopography, hydrology, permafrost and vegetation of the 1002 Area. These warrant a more comprehensive environmental review before such activities are allowed in order to understand and mitigate potential long-term consequences through thoughtful planning and discussion. A thorough evaluation in the context of a full Environmental Impact Statement (EIS) should look at the interaction of these impacts with the ongoing and anticipated effects of climate change and the likely development within the 1002 Area that would follow the seismic surveys.	Site-specific NEPA analysis would be done for any proposed seismic explorations.
4.	Donald	Walker	—	68	88	Seismic Testing	Major data gaps need to be filled to permit sound decisions regarding 3D-seismic exploration in the 1002 Area. These include (1) detailed characterizations of the surficial geomorphology, microtopography, vegetation, snow, and ground ice, which would also serve as the basis for detecting long-term changes; and (2) data regarding the long-term environmental effects of 3D seismic, which are necessary to understand the resistance and resilience of the various terrain and vegetation types to past and future 3D-seismic disturbance.	Site-specific NEPA analysis would be done for any proposed seismic explorations. This information is not essential to making a reasoned choice among alternatives for this Leasing EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Donald	Walker	—	68	134	Seismic Testing	The impacts of seismic exploration are the most geographically extensive direct impact of any aspect of oil exploration and development but have been largely ignored in assessments of the long-term consequences of oil development. Seismic exploration has been conducted every winter on the North Slope of Alaska since at least 1976, and trails in various stages of recovery are visible from the air during the summer in most areas surveyed. The proposed 61,000 km of seismic trails for the 1002 Area would exceed the 51,500 km of total trails that the National Research Council estimated were made on the North Slope in 10 years between 1990 and 2001 and the 43,450 km were predicted to be surveyed in the following 10 years.¹⁰⁵ Cumulative impacts are the incremental impacts of the proposed action added to other past, present, and reasonably foreseeable future actions¹⁰⁶. Cumulative impacts can be notably difficult to quantify and predict but must be considered in documents prepared under the National Environmental Policy Act (NEPA) regulations. Cumulative effects of 3D seismic to lands in the 1002 Area include direct and indirect impacts from the proposed survey, possible future repeated 3D-seismic surveys, future “nibbling” and fragmentation of the landscape by expanding networks of infrastructure associated with oil and gas exploration development and production, and climate change. The proposed seismic plan especially needs to consider the changing climate, such as the issues related to thawing permafrost and changing hydrologic regimes, as described elsewhere in this report.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Donald	Walker	—	68	136	Seismic Testing	Major data gaps exist regarding environmental conditions within the 1002 Area and the impacts of 3D seismic. Monitoring the consequences of seismic exploration should become routine in all surveys - past and future. For example, monitors' measurements of snow depths were a critical element in the analysis of impacts following the 1002-Area 2D surveys in 1984 and 1985. The long-term monitoring of terrain and vegetation recovery that followed these surveys resulted in most of what we know about impacts of seismic in the Arctic. Currently, fly-by inspections for fuel contamination, garbage, and trail damage are done to assess impacts soon after exploration, but little on-the-ground-monitoring of snow and terrain conditions is done during the surveys or following the surveys to determine short- or long-term terrain and vegetation recovery, and little documentation is available to the public. Although evaluating disturbance and recovery associated with wintertime seismic surveys in tundra vegetation is difficult, the current approach is insufficient to provide a scientific basis to assess the outcomes of current practices. Two main approaches have been used previously to observe and monitor changes to vegetation caused by seismic surveys in northern Alaska. ADNR used an experimental approach¹¹⁴ to develop criteria and models for determining the dates for opening and closing the tundra to wintertime cross-tundra travel.¹¹⁵ The main focus of the ADNR studies was to determine the resistance to compression of easily measured abiotic factors such as thaw depth, soil moisture, and the tundra mat. The results were used to establish the present ADNR snow-depth and soil-temperature thresholds for opening and closing dates on the coastal plain and foothills. The studies also resulted in a change in the methods used	Details of a monitoring plan will be determined when site-specific proposals are submitted for the NEPA analysis associated with future seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	to determine frozen-surface hardness. The studies did not examine the most damaging vehicle configurations used in camp-moves, nor did they address the issue of ecological resilience (ability to recover) following high levels of disturbance. Spatial variability of vegetation and site factors rarely can be controlled to provide an optimal statistical design for analyzing such patterns across a range of conditions. ¹¹⁶ The approach used during and following the 1984-1985 2D-seismic surveys in the 1002 Area included monitoring during the wintertime seismic activities followed by long-term studies of the vegetation and permafrost responses. ¹¹⁷ Winter observations recorded snow and terrain conditions. ^{118,119,120} Long-term summer observations included measurements of species cover and site factors on disturbed plots within the seismic trails ^{121,122,123} and control reference plots in undisturbed plots adjacent to the trails. ¹²⁴ The plots were monitored six times from 1984 to 2002 and continue to be monitored up to the present by the original authors. These observations resulted in models that predict the effects of vegetation type and initial disturbance levels on recovery patterns of the different plant growth forms as well as soil thaw depth. ¹²⁵ The studies found that severe impacts to tundra vegetation persisted for more than two decades after disturbance under some conditions and that recovery to pre-disturbance communities was not possible where trail subsidence occurred due to thawing of ground ice.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	F	Chapin	—	29337	1	Seismic Testing	The EIS fails to consider the impacts of seismic exploration, which is an integral component of the oil and gas development being evaluated. This omission of seismic trails is analogous to a failure to consider roads or gravel mining or contaminants as integral components of development impacts. As noted on page 3-71 of the EIS, some impacts of seismic exploration remain evident at least 25 years after the exploration is complete. The most important of these (essentially permanent) impacts are changes in permafrost, hydrology, and associated vegetation, when seismic trails become drainage features that alter the hydrology of the landscape. Perhaps the most long-lasting impacts will be those of the heavy vehicles that are used to move camps and equipment associated with seismic explorations. No effort has been made to design and use equipment that would minimize these ecological impacts. The seismic trails that are planned are considerably more extensive than the 2000 acres of maximum development that is stipulated in the EIS.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
8.	Craig	Mishler	—	31305	1	Seismic Testing	The draft EIS does not address the currently proposed seismic work, which would adversely affect foraging areas for caribou and other animals. While trying to authorize seismic activities through a different process, BLM fails to analyze the impacts of seismic exploration in this draft EIS, which arbitrarily and shortsightedly limits its analysis to leasing and later exploration. This narrow view is not consistent with BLM's obligation to consider all the environmental impacts of the oil and gas program.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Dennis	Higgs	—	37688	9	Seismic Testing	Seismic exploration, if allowed, is likely to use large arrays of seismic vibrators directed down through the ice at low frequencies and a high duty cycle. These frequencies are detectable by all fish species in the area and will likely transmit quite large distances through the ice and through any unfrozen water bodies nearby, whether freshwater or marine. Before exploration permits are granted much more information based on current available science as well as additional study must be assessed as it will likely have significant impacts on any fish in the Coastal Plain area.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
10.	Withheld	Withheld	—	41048	3	Seismic Testing	Seismic testing would disrupt nearly all polar bear denning on the coastal plain and scientists estimate there is a 23% chance that polar bear dens would be crushed by thumper trucks, this violates the Endangered Species Act. The draft EIS (pages 3-128 through 3-129) fails to adequately address this threat.	The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. All operators will be subject to regulations and stipulations under the ESA and MMPA.
11.	Tim	Hogan	—	54762	3	Seismic Testing	the DEIS fails to address seismic surveys proposed for this winter, discounting the fact that BLM is currently trying to authorize those seismic activities through other means. Aerial imagery of a grid of tracks left by heavy vehicles involved in recent seismic testing for oil and gas exploration in an area bordering the Arctic Refuge brings a chilling forbodeing of their impacts. These concerns are confirmed by scientists who have worked their entire careers on the North Slope. Tracks such as these could remain for decades or longer on the Refuge, with its vegetation of mosses, sedges and shrubs atop permafrost in one of the most pristine landscapes in North America. Any new tracks could potentially alter how surface water flows in the tundra, draining lakes or accelerating the thawing of permafrost in some areas.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Don	Ross	—	57405	3	Seismic Testing	Another significant error is to not incorporate a thorough analysis of the seismic exploration that will precede, as a matter of course, any oil leasing. Given the intensity and the thousands of miles of seismic miles plus camp moves, there will be severe and lasting impacts to the land and wildlife that cannot be adequately addressed by an environmental assessment compared to a more thorough environmental impact statement analysis. Why this has been given short shrift when the impacts will be major and severe is incomprehensible. There were lasting impacts on the Refuge from the reconnaissance level seismic program conducted in the '80's due to differences in topography and the lack of a heterogeneous snow cover that is shifted by blowing winds. It should also be noted that some of the most severe and lasting impacts came from camp moves.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
13.	Don	Ross	—	57405	4	Seismic Testing	The impacts that can be expected from an intensive seismic program on the scale of that presently proposed are detailed in a recently published in lengthy "White Paper" by University of Alaska Fairbanks researches and scientists. These finds should not be ignored.	Reference has been added to resource discussions in Chapter 3 when applicable.
14.	Sherrill	Futrell	—	67995	1	Seismic Testing	The draft statement fails to include the potential effects of seismic activity of related oil and gas exploration. Seismic exploration is part of the oil and gas development process and should be included in the full analysis.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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15.	Withheld	Withheld	—	68677	7	Seismic Testing	I believe that this is an inadequate and perhaps deliberately misleading Statement, for the following reasons: 6) Finally, the draft statement fails to include any information regarding the potential effects of seismic activity of related oil and gas exploration. Seismic exploration is part of the oil and gas development process and should be included in the full analysis.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
16.	Linda	Serret	—	69357	4	Seismic Testing	Could you clarify what is/is not part of the action and what is/is not to occur upon issuance of a lease? Specifically, Draft EIS Table 2-2 speaks to both seismic and exploratory drilling as subsequent phases, but in the news recently we heard seismic testing was underway this month in the ANWR coastal plain until it got delayed due to inability of obtaining Dol authorization. How is seismic testing being considered outside of the EIS process?	See Appendix B, and Section 3.2.6 in Chapter 3 for additional information. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
17.	Withheld	Withheld	—	72125	59	Seismic Testing	Seismic exploration itself would have major impacts on the Coastal Plain, which the Fish and Wildlife Service and BLM must consider.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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18.	Richard	Edwards	—	74281	46	Seismic Testing	Although discussion of seismic exploration is spread throughout the document, the Draft EIS fails to provide a cohesive understanding of the potential direct, indirect and cumulative effects of seismic exploration. It is not possible for the reviewer to get a clear picture of the scope and extent of impacts from seismic exploration given the current structure of the document. The Draft EIS must be revised to separate the impact analysis of exploration from that of development, production and transport.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
19.	Wolfgang	Rehor	—	74318	3	Seismic Testing	There are contradictory statements in the Draft EIS regarding seismic testing (see 3-110: "Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales" vs. 3-120: "Alternative D would close 476, 600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area, with potential impacts on terrestrial mammals, as described above, such as destruction of under-snow small mammal habitat, disturbance of denning mammals, crushing of forage species, alteration of snow melt timing.")	Text has been updated in Section 3.3.4 related to seismic exploration.
20.	Allen E.	Smith	—	74324	11	Seismic Testing	the DEIS fails to include consideration and analysis of the impacts of seismic surveys on the values of the Arctic Refuge coastal plain and the wildlife that rely on it.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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21.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	3	Seismic Testing	There are contradictory statements in the Draft EIS regarding seismic testing (see 3-110: „Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales” vs. 3-120: „Alternative D would close 476,600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area, with potential impacts on terrestrial mammals, as described above, such as destruction of under-snow small mammal habitat, disturbance of denning mammals, crushing of forage species, alteration of snowmelt timing.”).	Text has been updated in Section 3.3.4 related to seismic exploration.
22.	Dr. Julianne Lutz	Warren	—	74344	2	Seismic Testing	grossly insufficient on seismic including to aboveground-esp. caribou-and underground e.g., nesting mammals incl. polar bears and river, wetland, and marine life, esp. whales.	Text has been updated in Section 3.3.4 related to seismic exploration.
23.	Eric	Walsh	Government of Canada	74346	2	Seismic Testing	if the SAExploration seismic application ³ is approved under a separate NEPA process prior to a preferred alternative being identified in a final EIS, that the selection of an alternative is being prejudiced and the mitigations for seismic outlined in the dEIS may not apply.	The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
24.	Eric	Walsh	Government of Canada	74346	23	Seismic Testing	The leasing EIS process is meant to identify the cumulative impact of reasonably foreseeable activities, and ensure a thorough environmental review. There are public analyses ³³ that conclude there may be significant adverse effects of the proposed SAExploration program, and those analyses should be considered in the leasing EIS. For instance, it is not apparent how ROP 10 and 11 in the dEIS may be met given the data ³⁴ indicating that minimum snow depth conditions required by the ROPs are rarely met in much of the 1002 area.	The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. The authorizing agency will take all factors into consideration when evaluating a site-specific proposal and actions will still need to meet the objective of the ROP.

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25.	Campbell	Webb	—	75610	2	Seismic Testing	SEISMIC EXPLORATION OUTSIDE LEASE AREA. In several places in the DEIS it is stated that seismic exploration is expected throughout the entire program area, including areas not available for lease and, presumably, NSO areas (e.g., Section 3.3.4, Alternative A: "Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales." and Alternative D: "Alternative D would close 476,600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area"). I did not find any justification for this. While I imagine that triangulating the location of oil deposits may be easier with a widely-spaced array of listening devices, I did not find in the DEIS a discussion of why this should be allowed by default. Keeping winter seismic activities out of the non-lease and NSO areas would maintain a quality of undeveloped-ness in the eastern portions of Alternative D that would make it more acceptable to conservationists.	Text has been updated in Section 3.3.4 related to seismic exploration. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
26.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	21	Seismic Testing	There are contradictory statements in the Draft EIS regarding seismic testing (see 3-110: „Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales" vs. 3-120: „Alternative D would close 476,600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area, with potential impacts on terrestrial mammals, as described above, such as destruction of under-snow small mammal habitat, disturbance of denning mammals, crushing of forage species, alteration of snowmelt timing.").	Text has been updated in Section 3.3.4 related to seismic exploration.

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27.	Withheld	Withheld	—	79875	1	Seismic Testing	Seismic exploration: no indicator available to assess possible plant community changes;	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
28.	Withheld	Withheld	—	79888	6	Seismic Testing	he DEIS failed to consider proposed seismic surveys. ?SAExploration LLC plans toconduct seismic exploration surveys on the Coastal Plain during the winters of 2019 and2020, but the DEIS fails to analyze the impacts of their proposed seismic exploration.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. The SAEExploration seismic application is considered under the cumulative impacts analyses.
29.	Deana	Lemke	Porcupine Caribou Management Board	80214	19	Seismic Testing	The seismic program related to oil and gas development in the 1002 area is not being harmonized with the leasing program outlined in the draft EIS. Seismic activity is planned in areas that require the highest level of protection. This is an inappropriate sequencing of activities and the PCMB perceives this as disingenuous. BLM should not allow seismic activities in areas that may not be leased.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
30.	Janet	Jorgenson	—	81671	15	Seismic Testing	The DEIS has too little information about seismic exploration. The 3D seismic program as proposed by SAE (2018) has not occurred yet. It is an integral part of an oil and gas program and should be included as an integral part of the EIS. A draft EA for the proposed seismic exploration exists and it would be easy to pick information out of it to put in the EIS.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAEExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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31.	Janet	Jorgenson	—	81671	19	Seismic Testing	For DEIS page 3-71: 2 - Second paragraph on page 3-71 states "Studies on BMPs for winter off-road vehicle traffic suggest that the impacts described above could be mitigated somewhat by using vehicles fewer less pounds per square inch and performing seismic operations later in the winter when there is more snow cover and soils are frozen deeper (Bader and Guimond 2004; Bader 2005)." However, the options of using lighter vehicles and starting later in the winter, shown to reduce damage in that study, are not feasible given the current methods for doing seismic exploration on Alaska's North Slope (with large, heavy camps and thousands of miles of survey to be completed each winter). They are not proposed in SAE's application to do seismic exploration in Arctic Refuge in 2018-2019. For example, see the equipment list in the SAE Plan of Operations (page 17) showing continued use of D-7 caterpillar tractors, which have high psi but are necessary to pull the heaviest cat trains, especially up steeper slopes more common in the western portion of the 1002 area.	Additional site-specific NEPA analysis would be done for any proposed seismic explorations, and has not been completed for the SAE application. The authorizing agency will take all factors into consideration when evaluating a site-specific proposal and actions will still need to meet the objective of the ROPs, specifically ROP 11, 12, and 15 for protection of vegetation and wetlands.
32.	Janet	Jorgenson	—	81671	29	Seismic Testing	DEIS page B-8 states that an assumption used in the DEIS to develop the 'hypothetical scenario projections, a crucial element of analyzing the various alternatives, " is that processed area-wide three-dimensional (3D) seismic data would be available for licensing to all potential bidders at the time of the first lease sale. With the current expedited schedule for leasing, they would not have that. That lack of information requires reanalyzing the alternatives.	Text has been deleted due to delayed timing of the SAE application.

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33.	Janet	Jorgenson	—	81671	30	Seismic Testing	DEIS appendix B, section B-9 on page B-21: should include seismic exploration. And include in the tables B4 and B5, area estimates of longer term surface disturbance from seismic (using data from ANWR seismic trail study, perhaps use number of acres with longer-term disturbance, such as 'still disturbed after 10 years'). Alternative D would presumably involve less future seismic exploration than B or C."	Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Additional specific of seismic exploration would be addressed in future site-specific NEPA analysis.
34.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	99	Seismic Testing	Seismic Surveys. The Program Area contains a number of physiographic features that are distinct from more western portions of the North Slope. These distinctions (i.e., rougher terrain, more wind, less snow cover) have significant implications for seismic activities in the Program Area. The experience of 3-D seismic surveys in the areas to the west of the Arctic National Wildlife Refuge are not comparable to the Program Area. ⁷⁰ It is inappropriate to compare the impacts of seismic activities in the Program Area with those to the west. (DEIS, at 3-71). Seismic surveys may also alter plant communities and hydrology, thus altering forage quality for caribou. (DEIS, at 3-110 to 112). It is unclear why these issues are not addressed in the DEIS. The DEIS must address these issues.	The NPR-A study has some similar vegetation and wetland types for which parallels can reasonably be drawn. Discussion under "Exploration" in Section 3.3.1 describes the differences in terrain sensitivity. ROPs (ROP) have specific timing and snow depth requirements that would provide protection to sensitive areas that may naturally have low snow cover throughout the winter.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Julia	Wagner	—	83570	5	Seismic Testing	Seismic tests with long term impacts on the ground, on permafrost, waterflows and destruction of vegetation as well as possibly increasing risks of earthquakes. Since in this area several earthquakes happened during the last years, with an increase of earthquakes in 2018, and since this area has special tectonic characteristics, the risks of earthquakes are unpredictable, the impacts on the environment in combination with development infrastructure a nightmare. There are contradictory statements in the Draft EIS regarding seismic testing (see 3-110: „Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales” vs. 3-120: „Alternative D would close 476,600 acres of the PCH primary calving habitat area to lease sales; however, seismic activity could occur over the entire program area, with potential impacts on terrestrial mammals, as described above, such as destruction of under-snow small mammal habitat, disturbance of denning mammals, crushing of forage species, alteration of snowmelt timing.”).	Text has been updated in Section 3.3.4 related to seismic exploration.
36.	Withheld	Withheld	WWF-Canada	85059	15	Seismic Testing	Seismic: BLM's draft EIS wholly fails to consider any 3-dimensional (3D) seismic surveying, a highly significant issue that affects important resources and uses of the Coastal Plain, especially polar bears. The proposal for seismic activity which was publicly available in late 2018 will not be effective at detecting all maternal dens prior to commencement of a seismic survey or other oil and gas activities.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
37.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	7	Seismic Testing	SAExploration, LLC plans to conduct seismic exploration surveys on the Coastal Plain during the winters of 2019 and 2020, but the DEIS failed to analyze the impacts of this proposed seismic exploration.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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38.	Withheld	Withheld	—	92858	4	Seismic Testing	The impact on permafrost degradation from seismic testing in the Coastal Plain has not been determined. Changes in microtopography seen following seismic testing in adjacent areas of the North Slope have changed local hydrology and led to pitting and ponding, which can accelerate permafrost thaw leading to widescale landscape changes inconsistent with the original conservation values of the refuge and with unknown impacts on wildlife.	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable requirements during development activities.
39.	Withheld	Withheld	Government of the Northwest Territories	92862	93	Seismic Testing	SAExploration plans submitted to BLM included information on area, spacing of lines etc., which allowed determination of the miles of lines proposed lines. This project includes >20,000 miles of lines, over 2.4M vibe points and over 600,000 geophone points. The extent of this program is not clear in this description and if not the 900 miles indicated on page B-12. If the entire coastal plain is part of a 3D seismic program millions of dollars will be spent acquiring data in areas that may not be offered for lease. This could create additional pressure to open areas. Recommendation The GNWT recommends the BLM update this section with accurate information. The GNWT recommends the BLM not issue permits to conduct 3D seismic until areas offered for lease are determined.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Text has been updated to indicate that seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. The SAExploration seismic application is considered under the cumulative impacts analyses.
40.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	17	Seismic Testing	The DEIS does not consider the impacts from pre-leasing seismic activities, as proposed by SAExploration LLC. Pre-leasing seismic testing is a piece of the overall push for development in the Arctic Refuge associated with leasing, and as a result should be evaluated as part of the Coastal Plain Leasing EIS process.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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41.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	17	Seismic Testing	The DEIS fails to address SAEExploration's seismic proposal. While P.L. 115-97 authorized a leasing program for the Coastal Plain of the Arctic National Wildlife Refuge, the legislation makes no specific allowance for seismic testing.	The SAEExploration seismic application is considered under the cumulative impacts analyses. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
42.	—	—	Alaska Department of Natural Resources	94102	80	Seismic Testing	56 Appendix B, Table B-3 and text Correction The hypothetical development scenario suggests 3D seismic will be completed before the ROD is finished. A seismic program will not begin until late 2019 or early 2020 which should be after the ROD is finished.	Table B-3 has been updated for the Final EIS.
43.	Pamela	Miller	—	94107	6	Seismic Testing	In considering cumulative effects, BLM must address the prior 2D seismic surveys in the refuge, as well as future surveys for the life of the program. As well, BLM must address the cumulative impact of seismic surveys across the North Slope, Beaufort and Chukchi Seas, both nearshore (state waters) and offshore OCS.	Geological and geophysical surveys were considered part of the cumulative impact analysis (see Table F-1). Reasonably foreseeable future actions analyzed in the EIS are listed in Section F.3.2.
44.	Pamela	Miller	—	94108	2	Seismic Testing	At the onset of the surveys in 1984, inadequate snow cover was documented, but the surveys proceeded nonetheless. At this time, it is important to evaluate assumptions about the adequacy of protective snow. I offer some important considerations: What standards for determining adequate protective snow cover, and studies that document their effectiveness in preventing disturbance to vegetation, soils and permafrost?	The objective of ROP 11 was developed to mitigate against impacts to soils and permafrost. If the resources are experiencing impacts to the point where the objectives can no longer be met, then the BLM can proactively initiate the waiver, exception, or modification process to modify the ROP. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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45.	Pamela	Miller	—	94108	3	Seismic Testing	* With criteria for opening and closing dates and standards for adequate protective snow cover in NPRA and State lands, what has been the outcome? What long-term studies show how well the standards work in protecting tundra vegetation, permafrost, river, lake and coastal banks? What real-time field monitoring has been done? When operating under the standards, there will always be some impact, was it acceptable or not?	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable snow depth requirements during seasonal travel and development activities.
46.	Pamela	Miller	—	94108	4	Seismic Testing	* While there have been improvements in many seismic vehicle types and treads (e.g. from metal to rubber tracks), what tests have been done on vehicle and snow interactions, and for different slopes of terrain?	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable snow depth requirements during seasonal travel and development activities.
47.	Pamela	Miller	—	94108	6	Seismic Testing	* How will you determine if there is adequate protective snow cover? What is the protocol for sampling?	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable snow depth requirements during seasonal travel and development activities.

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48.	Pamela	Miller	—	94108	7	Seismic Testing	* How will the locations where snow measurements are taken be scientifically determined? What is the starting point, how many measurements, what is a sufficient number to get a reliable mean? What geographic unit of the Coastal Plain does each set of measurements cover?	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable snow depth requirements during seasonal travel and development activities.
49.	Pamela	Miller	—	94108	8	Seismic Testing	* Depth criteria alone is insufficient, despite being convenient. Whether the snow is new or old affects the density which is a different factor for protection of the tundra. What is the mass of snow that will be between the tundra and the vehicles as it gets packed down? While density is easy to measure, there are not studies of depth and density.	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable requirements during seasonal travel and development activities.
50.	Mark	Jorgenson	—	94411	3	Seismic Testing	The DEIS does not adequately assess the impacts of seismic trails, ice roads, and ice pads, and the interacting effects of climate warming and permafrost degradation. The seismic trails and ice roads will cause disturbance and should be counted toward areas impacted by development. In particular, a rigorous evaluation of seismic exploration impacts and alternatives needs to be incorporated into the DEIS. While the Tax Act specifies that only facilities covering the surface count toward disturbed lands, this is a political decision and is not a scientifically valid limitation for assessing impacts.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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51.	Withheld	Withheld	—	94435	6	Seismic Testing	The DEIS failed to consider proposed seismic surveys. SAExploration LLC plans to conduct seismic exploration surveys on the Coastal Plain during the winters of 2019 and 2020, but the DEIS fails to analyze the impacts of their proposed seismic exploration. The scope of the DEIS is too limited and did not consider the full range of oil and gas activities. BLM is required to consider all of the environmental impacts of the proposed oil and gas program.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
52.	Withheld	Withheld	—	95748	3	Seismic Testing	Lastly, the draft statement fails to include the potential effects of seismic activity of related oil and gas exploration. Seismic exploration is part of the oil and gas development process and should be included in the full analysis.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease.
53.	Brook	Brisson	Trustees for Alaska	96981	83	Seismic Testing	To date, BLM has not publicly identified any source of authority for permitting pre-leasing seismic exploration anywhere in the Coastal Plain, nor is any such authority apparent. BLM should not pursue authorization for SAE to explore for oil and gas on the Coastal Plain unless and until it can identify such authority, and it should do so publicly, to justify the time and resources that BLM, other agencies, and the public would invest in a permitting process.	The BLM is required to implement an oil and gas leasing program on the Coastal Plain per PL 115-97. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

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54.	Brook	Brisson	Trustees for Alaska	96981	84	Seismic Testing	There is no indication BLM took a hard look at any of the potential direct, indirect, and cumulative impacts of SAE's seismic proposal in the EIS, as required by NEPA. BLM should have addressed the potentially significant impacts of seismic exploration on every resource considered in the EIS, but failed to do so. In one of the few areas where BLM acknowledged it is preparing an EA related to seismic, it stated "[s]eismic exploration will be further detailed in the seismic environmental assessment, which is in preparation." ²⁶⁵ In other words, BLM wholly omitted any substantive discussion of these significant impacts based on the assertion that it will discuss them in a separate, yet-to-be-completed EA. That is contrary to NEPA. BLM is obligated to take a hard look at the direct, indirect, and cumulative impacts of the entire oil and gas program in the draft EIS. BLM cannot simply ignore these significant impacts by pointing to another analysis that has yet to be completed and has yet to be made available to the public for meaningful review as a way to bypass its current NEPA obligations.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Brook	Brisson	Trustees for Alaska	96981	85	Seismic Testing	BLM's failure to adequately consider SAE's proposal also leads it to dramatically underestimate the potential impacts of seismic as a whole. BLM assumes that only 900 square miles will be surveyed by 3D seismic vehicles. ²⁶⁶ BLM makes this assumption based on what it concludes is the size of a typical 3D survey, as seen in the NPRA and adjacent state lands. ²⁶⁷ But SAE's seismic proposal alone, which would encompass the entire Coastal Plain, is projected to cover 2,602 square miles. ²⁶⁸ Despite the significant impacts likely to occur from that proposal alone, BLM fails to discuss any of the impacts of pre-leasing seismic. It is also unclear how BLM's conclusion that there will only be 900 square miles of additional seismic surveys is consistent with reality. It does not appear to take into consideration the fact that seismic is often conducted as an ongoing activity that occurs throughout other stages of the oil and gas process, such as at the development and production stages for purposes of delineating oil and gas reservoirs, and not only prior to exploratory well drilling.	Text of the EIS has been revised to reflect that seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. The SAE's seismic application is considered under the cumulative impacts analyses.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	—	—	United States Fish and Wildlife Service	97942	4	Seismic Testing	Further, the analysis evaluates the assumption that only about 35% of the project area (900 sq. miles) will be surveyed using 3-D seismic. This estimate originates from typical 3-D survey operations in the NPR-A. However, it is unlikely these efforts are comparable with proposed seismic plans in the project area. For example, Walker et. al (2019) assumed the entire project area would be explored and estimated a total of 37,800 miles of seismic lines could impact an estimated 235 sq. miles with long-term impacts. The document mentions that seismic exploration will be further detailed in the seismic Environmental Analysis, but the assumed timing presented in Table B-3 is highly uncertain. Details and analysis regarding seismic exploration in the program area should be evaluated and revised in this document.	Text of the EIS, including Table B-3, has been revised to reflect that seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. The SAExploration seismic application is considered under the cumulative impacts analyses.
57.	—	—	United States Fish and Wildlife Service	97942	71	Seismic Testing	Page 3-133: The DEIS states that post-lease activities could include seismic, but fails to consider the fact that due to the future leasing activities analyzed in the DEIS, seismic surveys could occur prior to leasing. We recommend correcting this in the final EIS.	Text in Section 3.3.4 and Table B-3 has been updated for the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Pamela	Miller	—	98116	4	Seismic Testing	The 3-D seismic impacts are greatly underestimated in this EIS. First of all, it's not covering any preleasing seismic, which may or may not be allowed at this time. But this EIS should address any seismic activities that have occurred since the Tax Act changed the law and removed the prohibition on oil and gas leasing development exploration in the refuge. The total amount that the application, the SAE company applied for under a separate process that is being dealt with by an environmental assessment at this point outside of the EIS process is just wrong to do it, number one, in an EA and, more importantly, it should be considered with this whole EIS. That program assumed that the entire 1002 area could be covered with 3-D seismic. That acreage is more than the total amount of acreage and seismic impacts that this EIS assumes will ever take place through cumulative impacts in the coastal plain. The EIS fails to address 3-D seismic that would occur throughout the life of an oilfield, both preleasing, post leasing, and as companies are deciding their delineation for how -- where they are going to put -- where they would put oil fields and where the oil, if it exists, is located.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	Ronald	Yarnell	—	98123	10	Seismic Testing	And I've seen the impacts that 2-D testing has done in these areas. Even yet today as we stop to get out to take a rest when we're paddling down these wonderful rivers out on the coastal plain, we stop, walk across the gravel bars, get out on a tundra bank, climb up on a tundra bank, and invariably, without walking hardly any distance, we'll run into places where you're looking down a line from testing that was done in the 1980s. 40 years ago. The impacts from this are still visible. And the thumper trucks that they have now are heavier. They do more compaction of the tundra. The ones that they did in those days impacted the tundra just a little teeny bit, but it was enough for water to sit in those places. And it was enough for vegetation to start growing on the little bits of high ground. You can look straight down these lines for miles and miles and miles. So 3-D testing, instead of being a mile every square mile or whatever, I've heard that 3-D testing could be as close as 200 yards each grid section. That means every 200 yards there could be a straight line in a grid form all across the entire 1002 area. These would have huge impacts.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Ronald	Yarnell	—	98123	11	Seismic Testing	Anyway, we were able to hear it from that distance and we were able to see it. And in the evening -- it was in August. It was starting to get a little twilight. We could see these lights. The farther down -- we camped on the top of the delta just a mile from the Arctic Ocean. We were there about three nights, and all night long you could hear a thump, thump, thump, boom, thump, thump, thump, boom, thump, thump, boom, thump, thump, boom. It did that all night long constant. And this was ten miles away, and it was above the horizon. I mean, up there, you know, five degrees, even though it was ten miles outside the refuge. And you are telling me -- well, I mean, I'm just saying the impacts are going to be a lot bigger on the rivers, even if you have some kind of setbacks for these kind of developments. So I think this needs to be stressed more in the EIS.	Lease Stipulation 1 identifies setbacks for rivers and streams. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Ronald	Yarnell	—	98124	3	Seismic Testing	They are going to be doing these grids, from my understanding, 3-D, like several hundred yards apart all across the coastal plain in squares. So everywhere you walk is going to be covered with impacts. When these 40,000-ton vehicles drive over the tundra and they set off those explosions, thump, thump, thump, thump -- they are called thumper vehicles, and they compress the tundra. So you leave a little depression, after the next thaw you end up with water in it. And then along the edge you get a different kind of vegetation starts growing and 40 years later it's worse than it was before. So it's really sad. You can still see the stuff there from the seismic exploration activity that was done in the 1980s. Anyway, they mention these impacts, but they don't say anything about trying to prevent them. There is really no way to prevent them. Just fly around Prudhoe Bay. You will understand. Anyway, I have a lot of other things to say, but I want to let other people have a chance to talk, so I'll stop with that. Thanks a lot.	The Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Details of a monitoring plan will be determined when site-specific proposals are submitted. Developers will have to meet any applicable requirements during seasonal travel and development activities. Additional site-specific NEPA analysis would be done for any proposed seismic explorations.
62.	Thomas	Carper	United States Senate	98267	6	Seismic Testing	The analysis should also fully consider the adverse impacts of an oil and gas program on the Coastal Plain, including seismic exploration, which is currently proposed.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. The SAEExploration seismic application is considered under the cumulative impacts analyses.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Brook	Brisson	Trustees for Alaska	98269	1	Seismic Testing	BLM also needs to revise its analysis to take into account potential delays in SAEExploration's plans to conduct seismic exploration. The draft EIS assumes that multiple lease sales will be held within the first year after the signing of the Record of Decision, but also assumes that processed areawide three-dimensional seismic data will be available to all potential bidders at the time of the first lease sale. ²⁶⁹ If BLM still rushes to hold a lease sale by the end of 2019, that will presumably occur prior to SAE completing its proposed seismic activities. BLM needs to revise the draft EIS to account for any changes in SAEExploration's proposal to ensure that the reasonably foreseeable future development scenario and any analysis stemming from those assumptions is accurate.	Appendix B, including Table B-3, has been updated for the Final EIS. The SAEExploration seismic application is considered under the cumulative impacts analyses.
64.	Brook	Brisson	Trustees for Alaska	98269	3	Seismic Testing	BLM's statement that it will allow seismic in areas closed to leasing makes no sense unless BLM anticipates authorizing pre-leasing seismic in those areas, and yet BLM has wholly failed to consider pre-leasing seismic in the EIS. BLM's statement that it will allow seismic in areas that are closed to leasing, without any analysis of the potential impacts of those seismic activities, is contrary to NEPA and leads to the agency underestimating the potential impacts in its analysis. BLM's omission of any meaningful analysis of the impacts of SAE's proposal and other pre-leasing seismic activities, as well as its arbitrary conclusion that there will only be 900 square miles of seismic impacts, is contrary to NEPA and means BLM has dramatically underestimated the direct, indirect, and cumulative impacts of seismic surveys in the program area.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Text has been updated to indicate that seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Seismic surveys often extend past lease boundaries because additional information from nearby areas can be helpful in assessment the geology underlying the lease. However, there may be less incentive to survey areas closed to leasing. The EIS analyzes seismic activities as part of oil and gas development under all action alternatives, as this activity can occur post-lease.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Brook	Brisson	Trustees for Alaska	98269	4	Seismic Testing	BLM needs to examine how the potential impacts of seismic exploration would combine with those of all other ensuing, reasonably foreseeable oil and gas related authorizations in the region-including leasing, exploration, development, production, and transportation-in a single EIS to ensure that BLM will protect the resources of the Arctic Refuge. ²⁷¹ The entire purpose of SAExploration's seismic program is to conduct seismic imaging to help inform potential targets for future lease sales on the Coastal Plain. ²⁷² It is therefore intricately tied to BLM's consideration of the leasing program, and its impacts should be considered as part of the current EIS and not in a separate environmental analysis. BLM cannot improperly separate out its NEPA reviews of these directly connected and foreseeable actions, all of which have the potential to cause substantial impacts to the habitat and values of the Coastal Plain that have not been adequately considered by BLM as a result of its improperly carved up NEPA analysis.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses.
66.	Brook	Brisson	Trustees for Alaska	98269	5	Seismic Testing	For BLM to authorize an extensive seismic survey prior to concluding this process, whereby it will decide upon the protective measures to apply to seismic exploration, invariably prejudices the process. To the extent that BLM has any authority to authorize seismic surveys at all, which is unclear and we do not concede, BLM would be confined by the requirement that BLM not authorize activities that would result in undue or unnecessary degradation to the resources of the Refuge. Consequently, if BLM authorizes extensive seismic surveys, like the one SAExploration has proposed, the necessity of any subsequent seismic surveys would have to be evaluated in light of the SAExploration survey having already collected information. In short, the effort to regulate the future surveys by	BLM does not anticipate authorizing seismic surveys prior to issuing a ROD for this leasing EIS. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. The SAExploration seismic application is considered under the cumulative impacts analyses. Additional site-specific NEPA analysis would be done for any proposed seismic explorations. At that time prior surveys covering the same area would be considered in determining whether additional seismic surveys are necessary and should be authorized.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	developing requirements for them in this current EIS process will be circumvented by authorizing an extensive survey beforehand. Moreover, any seismic survey authorized by BLM would lack justification in the absence of the leasing program. Again, if BLM actually has any authority to authorize seismic, which we do not concede, BLM still cannot authorize an activity that would result in undue or unnecessary degradation. Therefore no survey can occur without the program itself. There would be no reason to survey for oil and gas resources on lands unless they can be leased, thus the purpose of the proposed seismic survey as a practical matter turns on the leasing program. For this independent reason, BLM's approval of SAExploration's application prior to completion of the current process violates NEPA even if the ongoing NEPA process were not prejudiced by the interim action. To correct this NEPA violation, BLM at a minimum should defer any authorization of seismic surveys at least until after it has properly completed the current EIS process and issued a record of decision on the program. Moreover, the current EIS process should transparently address that BLM is developing the standards and terms applicable to seismic survey applications, and the draft EIS must be revised to properly evaluate the impacts of those activities in this EIS and not a separate EA process.	(see above)

S.3.36 Sociocultural Systems

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Karina	Marzban	—	18201	4	Sociocultural Systems	For millennia, the native Gwich'in people have relied on the Porcupine caribou for their subsistence and cultural identity. The EIS must address the total impact of oil leasing on their way of life.	The EIS identifies multiple potential impacts to sociocultural systems, including Gwich'in

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Sally	Wright	—	18217	1	Sociocultural Systems	In closing, the review fails to acknowledge Gwich'in in Canada when determining what communities could be "appreciably affected" by changes to population patterns in the Porcupine caribou herd.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
3.	F	Chapin	—	29337	8	Sociocultural Systems	As noted on pages 3-191 and 3-192 of the EIS, the influx of temporary workers and other outsiders would be a stress on local residents. The EIS does not discuss ways in which this cultural disturbance could be mitigated.	ROP 36, 37, 38, 39 and 40 are designed to reduce conflicts with local residents. Specifically, ROP 40, Orientation programs associated with permitted activity, is designed to minimize cultural and resources impacts. It has been found to be effective in doing so on similar projects in NPRA.
4.	F	Chapin	—	29337	10	Sociocultural Systems	There has been extensive previous commentary by these communities about the cultural impacts of development and about the impacts of development on their subsistence activity. There has also been substantial research on these impacts. This community commentary and research that are required (page 3-196) is not adequately represented in the EIS.	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis. Traditional and local knowledge of these impacts has also informed the studies referenced in the analysis.
5.	Evan	Sterling	—	55119	2	Sociocultural Systems	While the DEIS finds that caribou would be impacted by the potential oil and gas development that could follow from leasing, the BLM through this document fails to adequately address these impacts and consider the full range of ecological and sociocultural impacts that will result.	Comment acknowledged. The EIS text in Section 3.4.4 has been revised in response to Draft EIS comments.
6.	Grant	Barnard	—	64449	4	Sociocultural Systems	What will be the impact on the Native Americans living in the area and depending on the natural ecosystem?	Comment acknowledged. The EIS text in Section 3.4.4 has been revised in response to Draft EIS comments.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Mary	Harte	—	65931	1	Sociocultural Systems	Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which would have significant ramifications over a vast area of Alaska and Canada, and these effects would persist beyond the estimated - - 130 years of exploitation. The DEIS fails to address this reality and its effects on indigenous people.	Comment acknowledged. The EIS text in Section 3.4.4 has been revised in response to Draft EIS comments.
8.	Donna	Thomas	Council of Athabaskan Tribal Governments	67681	1	Sociocultural Systems	NOW THEREFORE BE IT RESOLVED that President Trump uses his authority to recognize the rights of the Gwich'in People to continue to live our way of life by permanently protecting the calving and post-calving grounds of the Porcupine Caribou Herd in the Arctic National Wildlife Refuge as a National Monument. Resolution 2018-12 passed on this 14th day of December 2018 during a CATG Council of Chiefs Regular Meeting at which time a quorum as established and voting at all times.	Comment acknowledged.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Peter	Stern	—	69296	56	Sociocultural Systems	Page 3-183 "After passage of ANCSA, residents of the formerly established Venetie Indian Reservation, including those from Arctic Village and Venetie, elected a provision in ANCSA that allowed villages to forgo payments in exchange for free and simple title to former reservation land, in the case of Venetie and Arctic Village, approximately 1.8 million acres (Venetie Village Council 2013; Inoue 2004). An additional 3.4 million acres north and west of the original reservation were later added, based on earlier petitions. Venetie and Arctic Village thus established the Venetie Indian Reserve, which is managed jointly under the Native Village of Venetie Tribal Government." This paragraph has a lot of errors in it. The Venetie Chandalar Indian Reserve was created by executive order of the Dept of Interior in the 1940's. It was not a reservation but rather an executive order reserve. The ANCSA settlement just allowed a fee simple title transfer. Petitions to add land to the reserve were never approved. The reserve remains it's original size.	Text has been revised to incorporate comment information regarding the reserve
10.	Rebecca	Rom	—	69711	1	Sociocultural Systems	Despite acknowledging that oil and gas activities may impact caribou, the BLM does not address the far-reaching effects of development on the herd and incorrectly concludes that subsistence resources for the Gwich'in will not be impacted. The cultural and spiritual importance of the Coastal Plain cannot be overstated, yet this entire process has cast aside the traditional knowledge and human rights of the Gwich'in.	The EIS acknowledges the importance of the Coastal Plain and the PCH to the Gwich'in and describes potential sociocultural effects. The BLM uses the relevant best available information in the analysis, including traditional and local knowledge.
11.	John	Lawrence	Form Letter 4 - Email	71636	3	Sociocultural Systems	The EIS must fully study how oil and gas drilling will impact the way of life for the Gwich'in people.	The EIS identifies multiple potential impacts to sociocultural systems, including Gwich'in

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Matthew	Rexford	Native Village of Kaktovik	74308	1	Sociocultural Systems	NVK feels that the DEIS would benefit from closer alignment with other recently completed EIS's on the North Slope, namely the 2012 Point Thomson EIS and the 2013 NPR-A IAP/EIS, which present a much more clear, accurate, and well-rounded picture of the history of Kaktovik, Iñupiat subsistence values, and our relationship with our environment. Of particular note is the false narrative that the DEIS presents in the lopsided discussion of impacts to Gwich'in communities; mistakenly inferring that those communities, hundreds of miles and a mountain range away from the Program Area, have at much at stake as our community, which is within the bounds of the Program Area.	Additional information regarding the history of Kaktovik has been included. As noted, previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Matthew	Rexford	Native Village of Kaktovik	74308	3	Sociocultural Systems	The DEIS has introduced a strange duality in legitimizing Arctic Village and Venetie's claim to the 1002 Area, though Map 3-44 "Arctic Village and Venetie Subsistence Use Areas" proves that even prior to the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 those communities did not use the Coastal Plain for subsistence. The maps clearly show that the traditional use areas for these two communities remained south of the continental divide in the Brooks Range. Kaktovik, through ANILCA, is limited in our access to our own traditional use areas including allotments, campsites, important subsistence areas, and cultural and historic sites. The BLM has been clear in their response that rectifying this wrong is beyond the jurisdiction of the agency; and yet, the BLM has allowed communities that do not even claim traditional use of the Coastal Plain to hijack this process. The DEIS as presented is lopsided in its focus on the Gwich'in, who do not live within the 1002 area nor ANWR in its entirety. The BLM should adjust their analysis and remain focused on the impacted community.	The Draft EIS does not identify that Arctic Village and Venetie have subsistence uses in the program area, but recognizes their reliance on subsistence resources that use the Coastal Plain and the Coastal Plain having sacred importance to their culture. Previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Matthew	Rexford	Native Village of Kaktovik	74308	13	Sociocultural Systems	Pg. 3-183 - "Gwich'in People" NVK strongly objects to this biased representation of the preservation of the Program Area. Our people are the actual residents of the 1002 Coastal Plain and we have lived here since time immemorial. We consider ourselves the stewards of this land as we have been for generations; any suggestions to the contrary are culturally insensitive and paternalistic. The narrative presented here is extremely selective; as mentioned and cited in a previous section, the Gwich'in people sought to lease the entirety of the 1.8 million acre Venetie Indian Reservation to oil and gas development. Not including this historical perspective seems to consciously bias one indigenous group over another, presents a false dichotomy of "for development" Alaska Natives and "against development" Alaska Natives, and must be corrected.	All study communities are addressed in the Affected Environment, as this section is meant to describe the current baseline conditions of potentially affected communities. Differences in how sociocultural systems will be affected are discussed in the Direct and Indirect Impacts section. The EIS does not include mention of oil and gas leasing efforts by Venetie as this occurred decades ago and is not relevant to the current baseline of sociocultural systems in that community. Importance of the program area, including the stewardship role of the Kaktovikmiut, is addressed under "Belief Systems." Additional text has been added to the introduction to ensure the importance of the program area to Kaktovik is clearly stated
15.	Matthew	Rexford	Native Village of Kaktovik	74308	14	Sociocultural Systems	Pg. 3-190 The DEIS states "Increased access to program-related roads, introduction of new infrastructure in traditional use areas, and associated changes in subsistence travel routes and harvesting patterns could increase the risk of injuries and accidents during subsistence activities, causing negative social effects." Please provide data to support this claim or remove. Kaktovik already has roads and few, if any, injuries occur on roads. Iñupiat people are capable of operating on roads; we train for, take driving tests, and are required to have driver's licenses like people in all other communities.	Text has been revised to identify the increased potential for injury both on and off roads related to interaction with industrial infrastructure and traffic in addition to resulting changes in travel routes -- not related to general use of roads by the Iñupiat.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Matthew	Rexford	Native Village of Kaktovik	74308	15	Sociocultural Systems	Pg. 3-192 The DEIS states "Increased interactions with outsiders in traditional use areas and communities has the potential to affect traditional values and belief systems over time and may also result in increased social problems, if such interactions lead to greater access to drugs and alcohol." This assertion seems baseless, please qualify this statement or remove it. Kaktovik has hundreds of visitors through polar bear viewing tours and other activities. The DEIS states elsewhere that workers are likely to be housed at camps outside of the village and are likely to have minimal interactions with community members. Additionally, industry has an extremely strict zero-tolerance policy to drugs and alcohol.	The sentence has been removed as requested.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Matthew	Rexford	Native Village of Kaktovik	74308	17	Sociocultural Systems	Pg. 3-199 - Sociocultural Systems The DEIS states "Because of the particular spiritual and cultural importance of the coastal plain and the PCH calving grounds to the people of Arctic Village and Venetie, any disruption to that herd or contamination or degradation of calving grounds in the program area would have potential sociocultural impacts on the Gwich'in people, in terms of their belief system and cultural identity." NVK strongly objects to the insinuation that the Coastal Plain has more spiritual and cultural significance to the people of Arctic Village and Venetie than to the Kaktovikmiut people. These are lands that we have inhabited, used for hunting, fishing, gathering, and raised our families on for over 11,000 years. The footsteps of our people are all over the Coastal Plain, our ancestors are buried here, and generations of Kaktovikmiut will use, survive, and thrive off this land long after we are gone. Bowhead whales are central to our people's culture and are known to calve in the Bering Sea before they start their migration north into the Arctic. We Iñupiat do not seek to claim spiritual and cultural significance for our people to lands in the Kamchatka Peninsula or on the Aleutian Island chain at the expense of people who have lived there for generations. The BLM must be careful to separate objective facts from these subjective talking points making false claims that have been brought forth throughout the public process to oppose oil and gas development in the 1002 Area; it is offensive to us as Kaktovikmiut people for the BLM to legitimize these claims.	The cultural, ancestral, and spiritual attachment of the Gwich'in to the Coastal Plain has been documented in the literature and is a scoping issue that must be addressed in the EIS. In addition, the program area is directly north of Gwich'in caribou hunting areas and therefore there is potential for indirect impacts to caribou availability for the Gwich'in. However, the section has been reviewed and edited to ensure that it does not suggest that the Gwich'in have greater spiritual/cultural ties to the Coastal Plain than the Iñupiat.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
18.	Rosa	Brown	Vuntut Gwitchin Government	74326	5	Sociocultural Systems	Information about Old Crow and the significant relationship of the Vuntut Gwitch'in with the Porcupine caribou herd, submitted by the Vuntut Gwitchin Government during scoping phase, was disregarded, and the Bureau of Land Management failed to provide an adequate environmental and social baseline for our community and First Nation upon which to analyze impacts.	Text has been added specifically addressing Canadian sociocultural systems and potential impacts to those systems. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
19.	Rosa	Brown	Vuntut Gwitchin Government	74326	6	Sociocultural Systems	While the draft EIS mentions Old Crow is "among the most likely to experience potential indirect impacts due to their proximity and reliance on the PCH," (draft EIS p. 3-170), the Bureau of Land Management provides no specific information about our community, the Vuntut Gwitch'in special relationship with the Porcupine caribou herd, and no Traditional Knowledge is included in the draft EIS - a problem that was exacerbated by the lack of public meetings in Old Crow, Yukon or direct consultation with the Vuntut Gwitchin First Nation.	Text has been added specifically addressing Canadian sociocultural systems and potential impacts to those systems. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Rosa	Brown	Vuntut Gwitchin Government	74326	22	Sociocultural Systems	Sociocultural Impacts: Analysis stops at Canadian border The transboundary Porcupine caribou herd sustains the Vuntut Gwich'in and other Gwich'in communities located in the winter range or along migratory routes in Alaska, the Yukon and the North West Territories. The draft EIS is deficient in limiting the evaluation of sociocultural impacts to Alaskan people and communities, and it completely fails to address how oil and gas activity on the Coastal Plain will affect sociocultural values of the Vuntut Gwitchin First Nation, and other Canadian user groups. The Vuntut Gwitchin raised these important cumulative, sociocultural impacts issues during the scoping phase, but were not addressed in the draft EIS. The brief discussion of existing social and political organization for "Gwich'in People" including in Canada (Draft EIS Vol I pp 3-182 to 3-183) does not address the Vuntut Gwitchin or other transboundary Gwich'in. This section focuses on the US social structures (DEIS 3-183 to 185) and fails to distinguish Canadian differences, for example, land and wildlife co-management responsibilities arising from the Vuntut Gwitchin First Nation Final Agreement. Furthermore, the draft EIS does not acknowledge the important sharing and other transboundary ties between Gwich'in communities.	Text has been added specifically addressing Canadian sociocultural systems and potential impacts to those systems. The EIS has been revised to more fully analyze transboundary impacts, where applicable.
21.	Withheld	Withheld	—	75145	8	Sociocultural Systems	The DEIS ignored the traditional knowledge and human rights of the Gwich'in.	The EIS incorporates Gwich'in traditional knowledge relevant to the program area and PCH where appropriate in the subsistence section. Much of the description of sociocultural systems (particularly "belief systems") is based on traditional knowledge of local residents. Added reference to the importance of traditional knowledge to Gwich'in under "Social and Political Organization" subsection in Section 3.4.4.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Christina	Tippin	City of Point Hope	75230	1	Sociocultural Systems	The Kaktovikmiut are the actual residents of the Program Area and stewards of the land, and should be the main focus of the Cultural Resources and Sociocultural Analysis section of the DEIS. In the DEIS, you have included extensive Gwich'in history and cultural resources impact analysis but fail to mention previous development efforts in their own homelands. This presents a lopsided and misleading picture and needs to be corrected.	The EIS does provide similar levels of detail in its description of baseline sociocultural systems for the Iñupiat and the Gwich'in. However, the impact analysis clearly focuses on potential impacts to Kaktovik. The impact analysis also identifies where Kaktovik is more likely to experience impacts than other communities. Did not include mention of oil and gas leasing efforts by Venetie as this occurred decades ago and is not relevant to the current baseline of sociocultural systems in that community. Section has been revised to ensure importance of program area to the Kaktovikmiut is clearly stated and that the text does not imply the Gwich'in have a greater spiritual connection to the area.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Christina	Tippin	City of Point Hope	75230	9	Sociocultural Systems	the Kaktovikmiut, who have occupied the Coastal Plain of the Arctic National Wildlife Refuge (ANWR, Refuge) since time immemorial and are the only community within the 1002 area, and the greater Refuge as a whole. Of note to me in .the DE IS is that throughout the document, but specifically in the section 3.4 Social Systems, in the Cultural Resources, Sociocultural Systems, and History, there is more discussion about the history and cultural resources impact analysis for Gwich'in communities south of the Brooks Range than the Iñupiat people who occupy the land and unarguably stand to be the most impacted. One of the core Iñupiat values that Iñupiat people across the Region live, raise our families, and conduct our business by is respect for nature. We believe that the earth and its inhabitants deserve to be healthy because this is our home and where we raise our families. The suggestion that another indigenous community plays a more prominent role in preserving our homelands is culturally insensitive - We are the stewards of our lands and waters and have been since time immemorial.	The EIS does provide similar levels of detail in its description of baseline sociocultural systems for the Iñupiat and the Gwich'in. However, the impact analysis clearly focuses on potential impacts to Kaktovik. Section 3.4.4 has been revised to ensure importance of program area to the Kaktovikmiut is clearly stated and that the text does not imply the Gwich'in have a greater spiritual connection to the area.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Withheld	Withheld	ikpeagvik Iñupiat Corporation	75577	1	Sociocultural Systems	in the section 3.4 Social Systems, in the Cultural Resources, Sociocultural Systems, and History, there is more discussion about the history and cultural resources impact analysis for Gwich'in communities south of the Brooks Range than the Iñupiat people who occupy the land and unarguably stand to be the most impacted. One of the core Iñupiat values that Iñupiat people across the Region live, raise our families, and conduct our business by is respect for nature. We believe that the earth and its inhabitants deserve to be healthy because this is our home and where we raise our families. The suggestion that another indigenous community plays a more prominent role in preserving our homelands is culturally insensitive - We are the stewards of our lands and waters and have been since time immemorial.	The EIS does provide similar levels of detail in its description of baseline sociocultural systems for the Iñupiat and the Gwich'in. However, the impact analysis clearly focuses on potential impacts to Kaktovik. Section has been revised to ensure importance of program area to the Kaktovikmiut is clearly stated and that the text does not imply the Gwich'in have a greater spiritual connection to the area.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	David	MacMartin	Gwich'in Tribal Council	75581	1	Sociocultural Systems	The GTC will present such new information in this submission that we present in support of the call made by the Government of Canada for the BLM to establish a supplementary Leasing EIS to ensure that all relevant information is considered before a BLM decision is made to finalize the Leasing EIS. This information relates to recorded Gwich'in Traditional Knowledge about the Porcupine Caribou and the need for further research to be done to address gaps that exist in such recorded knowledge, prior to a BLM ROD on the proposed ANWR Coastal Plain oil and gas leasing EIS. The draft Leasing EIS is devoid of consideration of such traditional knowledge which is and must be an essential source of information to consider for a complete Leasing EIS. Placing equal weight on such traditional knowledge in relation to available scientific knowledge in assessing the environmental impacts of the proposed oil and gas leasing program for the ANWR Coastal Plain area is one of the important areas identified by the GTC in its Draft Leasing EIS scoping process letter submission as needing to be considered. Upon such consideration, together with other factors, it will become apparent why it is necessary for the BLM to decide to initiate a supplementary EIS. It is necessary in order to ensure that an up to date and comprehensive body of recorded Gwich'in traditional knowledge about the Porcupine Caribou is available for consideration by the BLM in reaching a ROD on the content of its Coastal Plain Leasing EIS.	Best available information is cited and incorporated, as applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	David	MacMartin	Gwich'in Tribal Council	75581	2	Sociocultural Systems	The draft Leasing EIS released in December 2018 does not reflect consideration of recorded traditional knowledge, let alone consideration of recorded traditional knowledge of the Gwich'in harvesters who account for 85 percent of the harvesters of Porcupine Caribou. This is a clear and glaring deficiency in the draft Leasing EIS. It must be rectified before the BLM could be in a position to reach a ROD on the Leasing EIS for the proposed oil and gas leasing program for the Alaskan Coastal Plain region of the ANWR.	Traditional knowledge, to include oral histories, has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process.
27.	Lin	Davis	—	75891	2	Sociocultural Systems	The network of roads, ice roads, pads, noise, lights, activity, seismic impacts, and stinky odors endanger the calving Porcupine caribou. Denning winter polar bears may also be harmed and their ability to survive additionally diminished. The DEIS does not examine this likely unacceptable harm to the Gwich'in, their culture and subsistence, and the likely harm to the Porcupine caribou and polar bears	The EIS identifies multiple potential impacts to sociocultural systems, including Gwich'in

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Chandra	Turner	Inuvialuit Game Council	75904	6	Sociocultural Systems	The differential treatment of Alaskans and Canadians who may be impacted by the proposed leasing program is even more obvious in the section of the DEIS (3.4.4) dealing with Sociocultural Systems which acknowledges at the outset that (at 3-178): This section provides a brief overview of sociocultural systems among the Iñupiat and Gwich'in peoples, including history, social/political organization, the mixed cash/subsistence economy, and belief systems. There is an emphasis on the communities closest to the program area: Kaktovik, Nuiqsut, Arctic Village, and Venetie. As a result of this emphasis there is no discussion of Inuvialuit history, the social and political organization of the Inuvialuit, the mixed cash/subsistence economy of the Inuvialuit or the belief systems of the Inuvialuit and there is no consideration of the impact of post-leasing activities on Inuvialuit socio-cultural systems other than the passing and formulaic reference (at 3-190) to "and other communities that rely on the PCH and CAH." While this section of the DEIS references Gwich'in peoples, these are all references to Alaskan Gwich'in communities and not to Canadian Gwich'in communities. Certainly, there is no specific consideration of Canadian Indigenous communities in this section of the DEIS.	Documentation provided during the scoping submission has been reviewed and the EIS has been revised to more fully analyze transboundary impacts, where applicable.
29.	Chandra	Turner	Inuvialuit Game Council	75904	25	Sociocultural Systems	Canadian users are not mentioned in Sections 3.4.2: Cultural Resources or 3.4.4: Sociocultural Systems. For Alaskan communities, it is stated that ethnographic cultural resources have "not been documented [...] under the existing regulatory frameworks" (3-156). Despite this assertion, traditional knowledge has been extensively documented in the Inuvialuit Settlement Region, the Gwich'in Settlement Area, and Alaska. Some of this documentation was referred to in our scoping submission (Appendix I). None of this available information was consulted.	Documentation provided during the scoping submission has been reviewed and the EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Chandra	Turner	Inuvialuit Game Council	75904	27	Sociocultural Systems	The DEIS lacks any thorough analysis of the social consequences of developing traditional lands or disrupting transboundary subsistence resource availability. Section 3.4.4 lacks any adequate analysis of the complex sociocultural importance of subsistence and traditional lands. Social consequences are briefly addressed under "Disruptions to Subsistence Activities and Uses" (3-190), but Canadian users are not mentioned. This is not due to a lack of available information, but rather a lack of consultation and informed analysis.	Documentation provided during the scoping submission has been reviewed and the EIS has been revised to more fully analyze transboundary impacts, where applicable.
31.	Chandra	Turner	Inuvialuit Game Council	75904	33	Sociocultural Systems	The DEIS omits any analysis on the impacts of reduced food security, access to nutritious traditional foods, economic impacts, and reduced social cohesion, on public health and well-being. Beyond the vague phrase "cultural sustenance" (3-240), the DEIS makes no reference to the social determinants of health. The importance of subsistence and cultural resources are clearly documented in socioeconomic research (see references below). Given the potential impacts of the proposed developments on the critical habitat of several important harvested animal populations, and, by extension, the traditional resource abundance and availability to Indigenous harvesters (see Russell & Gunn, 2019), rigorous sociological work must be carried out to assess the actual potential impact on the health of Inuvialuit, Iñupiat, and Gwich'in communities.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	20	Sociocultural Systems	it is morally not acceptable to take away traditional lands from people with a millennia old indigenous tradition who are so hurt and traumatized by the colonization and from whom so much has been taken away in the recent history, and to steal them the opportunity to heal and live on according to their old traditions, to endanger and traumatize them furthermore by stealing them one of the still existent opportunities to live a subsistence life. This, the respect, meaningful consultations between equals is what our democratic belief calls for.	Consultation with tribes is occurring as part of the Section 106 process and associated development of a programmatic agreement.
33.	Marna	Sanford	Tanana Chiefs Conference	79886	3	Sociocultural Systems	BLM has also failed to seek and integrate traditional ecological knowledge from elders and tribal members into its analysis. A thorough and scientifically-supported analysis, including consideration of our communities' knowledge, is essential. BLM's failure to include our traditional knowledge calls into question its conclusions regarding the impact of oil and gas to our Tribe and the Gwich'in Tribes in the Region.	BLM uses the best available information to develop the EIS. This information includes local and traditional knowledge. Where available, the analysis makes extensive use of this information. For example, the subsistence information from SRB&A and others was developed with extensive community involvement in all phases of the study. Similarly, the study of sharing networks by Kofinas, et. al., 2016 was developed using TK/LK.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Withheld	Withheld	City of Atkasuk	81039	1	Sociocultural Systems	I understand that this National Environmental Policy Act process is subject to Secretarial Order 3355 for an abbreviated EIS process. Under these new parameters, it is of critical importance that the concerns brought up from local stakeholders are heard first and foremost. You should more clearly center the Kaktovikmiut, who have occupied the Coastal Plain of the Arctic National Wildlife Refuge (ANWR, Refuge) since time immemorial and are the only community within the 1002 area, and the greater Refuge as a whole. Of note to me in the DEIS is that throughout the document, but specifically in the section 3.4 Social Systems, in the Cultural Resources, Sociocultural Systems, and History, there is more discussion about the history and cultural resources impact analysis for Gwich'in communities south of the Brooks Range than the Iñupiat people who occupy the land and unarguably stand to be the most impacted. One of the core Iñupiaq values that Iñupiat people across the Region live, raise our families, and conduct our business by is respect for nature. We believe that the earth and its inhabitants deserve to be healthy because this is our home and where we raise our families. The suggestion that another indigenous community plays a more prominent role in preserving our homelands is culturally insensitive - We are the stewards of our lands and waters and have been since time immemorial.	The EIS does provide similar levels of detail in its description of baseline sociocultural systems for the Iñupiat and the Gwich'in. However, the impact analysis clearly focuses on potential impacts to Kaktovik. Section has been revised to ensure importance of program area to the Kaktovikmiut is clearly stated and that the text does not imply the Gwich'in have a greater spiritual connection to the area.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Herbert	Kinneveauk	Tikigaq Corporation	81041	1	Sociocultural Systems	The DEIS seems to present a biased approach to the two indigenous communities that stand to be impacted. The Kaktovikmiut are the actual residents of the Program Area and stewards of the land, and should be the main focus of the Cultural Resources and Sociocultural Analysis section of the DEIS. In the DEIS, you have included extensive Gwich'in history and cultural resources impact analysis but fail to mention previous development efforts in their own homelands. This presents a lopsided and misleading picture and needs to be corrected.	The EIS does provide similar levels of detail in its description of baseline sociocultural systems for the Iñupiat and the Gwich'in. However, the impact analysis clearly focuses on potential impacts to Kaktovik. The impact analysis also identifies where Kaktovik is more likely to experience impacts than other communities. Did not include mention of oil and gas leasing efforts by Venetie as this occurred decades ago and is not relevant to the current baseline of sociocultural systems in that community. Section has been revised to ensure importance of program area to the Kaktovikmiut is clearly stated and that the text does not imply the Gwich'in have a greater spiritual connection to the area.
36.	Allison	Athens	—	81746	10	Sociocultural Systems	What is the effect on nearby communities from the nearby camps of seasonal workers?	Effects of seasonal workers are addressed in the EIS at heading "Influx of Non-Resident Temporary Workers and Outsiders" in Section 3.4.4. Mitigation measures such as the ROP 40, Orientation Program, also reduces effects.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	37	Sociocultural Systems	Though the DEIS states that there will be “adverse, regional, and long term” impacts, the BLM must also discuss the kinds of impacts that may occur as a result of the proposed leasing program. The DEIS defines “the loss of traditional meaning, identity, association, or importance of a resource” and “effects on beliefs and traditional religious practices” as indirect impacts. (DEIS, at 3-156). And the DEIS states that “the presence of development in the program area would constitute a cultural impact on the Gwich'in people.” (DEIS, at 3-156). Categorizing the destruction of the Gwich'in culture as merely an indirect impact is absurd, disrespectful, and evidences the BLM's failure and refusal to adequately analyze the impacts of development on Gwich'in cultural resources. Instead, this is a direct impact because the effects of the proposed leasing program on both the Iizhik Gwats'an Gwandaii Goodlit and the Gwich'in people will “occur at the same time and place” as approval of the leasing program.²⁹ To repeat the falsehood, “Issuance of oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would have no direct impacts on the environment because by itself a lease does not authorize any on the ground oil and gas activities,” throughout this DEIS is disingenuous, especially after the BLM has reviewed the scoping comments submitted by the Gwich'in people.	Impacts resulting from on-the-ground oil and gas activities are described as indirect impacts in the EIS because the issuance of leases does not authorize any such activities. All on-the-ground activities will be the subject of additional NEPA analysis, which would include both direct and indirect impacts. The Tax Act lifted the prohibition on oil and gas leasing in the Coastal Plain and directed BLM to implement an oil and gas program, thus BLM's adoption of a leasing program as required by the Tax Act will not result in any discernable additional direct cultural impacts beyond what the Tax Act has already caused.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	38	Sociocultural Systems	Scoping comments from the communities of Venetie and Arctic Village have made it clear that this NEPA process is impacting them through stress and fear for their way of life and cultural identity. The DEIS must clarify how the BLM will avoid (then minimize, then mitigate) the "adverse, regional, and long term" impacts that will result in the "the loss of traditional meaning, identity, association, or importance of a resource; effects on beliefs and traditional religious practices" for the Gwich'in people.	The EIS addresses mitigation measures at a leasing stage, recognizing appropriate mitigation during a site specific project proposal will require separate NEPA analysis to analyze the specific impacts. The BLM is required to also ensure compliance with Section 106 of the NHPA, and engage in government-to-government consultation as appropriate.
39.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	44	Sociocultural Systems	BLM did not follow its own guidance laid out in its handbook for Improving and Sustaining BLM-Tribal Relations, which states that the agency should conduct ethnographic studies early in the planning cycle to address tribal concerns on a broad landscape scale. ³³ In developing this DEIS, the BLM has also ignored its own guidance by placing the burden upon the Gwich'in people to identify their own cultural landscape. This is contrary to BLM's guidance that directs the agency not to place the burden of identification on Tribes.	BLM has reviewed available sources of cultural resources information to inventory the cultural landscape, including information provided by tribes. BLM policy requires it to offer tribes the opportunity to participate in such efforts, however the responsibility for such efforts remains that of BLM. The BLM has created Appendix Q to acknowledge data gaps.
40.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	55	Sociocultural Systems	The DEIS describes only the quantifiable effects of impacts to the PCH (i.e., nutritional value, jobs, and hunting). The DEIS fails to adequately analyze impacts on cultural identity, and effects on sense of self, sense of community, sense of efficacy, and psycho-social well-being. There is insufficient discussion of the generations of Gwich'in who have endured centuries of colonialism, which has eroded the Gwich'in's trust in the federal and state governments. Accordingly, the DEIS fails to address historic and intergenerational trauma and further fails to analyze how such trauma will be exacerbated within Gwich'in communities from impacts to the PHC from oil and gas development in the Coastal Plain.	The EIS describes impacts to Gwich'in as a result of this program. Additional language has been added to sociocultural and public health sections to include descriptions of impacts provided by commenters.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	56	Sociocultural Systems	The DEIS fails to address the kinship relationships between the Gwich'in who live on both sides of the United States-Canada border, who travel back and forth regularly, and are related as family. Caribou harvested in Canada by Canadian Gwich'in are shared with Gwich'in in Alaska and vise versa	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
42.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	58	Sociocultural Systems	The DEIS repeatedly states: Issuance of oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would have no direct impacts on the environment because by itself a lease does not authorize any on the ground oil and gas activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to further environmental review and reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease. The impacts of such future exploration and development activities that may occur because of the issuance of leases are considered potential indirect impacts of leasing. (DEIS, at 3-168). This is not true. The issuance of leases would cause significant psycho-social stress on the people who depend on subsistence resources within the Coastal Plain. Stress in Native communities is well documented, emerging in a number of past events. As recently documented, stresses are also cumulative and intergenerational. The effects of past colonialism along with ongoing threats to the well-being of the Gwich'in could have effects that may be hard to measure, but are nevertheless significant. The issuance of leases would also cause significant effects because the Program Area is considered sacred by the Gwich'in. The issuance of leases therefore affects the integrity of location, feeling, and association of lizhik Gwats'an Gwandaii Goodlit to the Gwich'in.	Impacts resulting from on-the-ground oil and gas activities are described as indirect impacts in the EIS because the issuance of leases does not authorize any such activities. All on-the-ground activities will be the subject of additional NEPA analysis, which would include both direct and indirect impacts. The Tax Act lifted the prohibition on oil and gas leasing in the Coastal Plain and directed BLM to implement an oil and gas program, thus BLM's adoption of a leasing program as required by the Tax Act will not result in any discernable additional direct cultural impacts beyond what the Tax Act has already caused.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	59	Sociocultural Systems	The DEIS fails to analyze the psychological, cultural, and spiritual effects of contamination; the feeling of loss of something so closely tied to culture. (DEIS, at 3-174). The Coastal Plain is sacred to the Gwich'in; therefore, contaminations, even perceived, within the Program Area would have more than just physical effects. Any disruption, contamination, or degradation would have significant impacts on Gwich'in society, culture, economy, spirituality, way of life, subsistence, and public health. (DEIS, at 3-199).	Section 3.4.3 addresses potential spiritual impacts associated with degradation of the Coastal Plain. Section 3.4.4 stresses the spiritual and cultural importance of caribou and the Coastal Plain to the Gwich'in and the potential cultural impacts associated with its development. Text has been added to Section 3.4.4 indicating that contamination of the Coastal Plain landscape would have psychological impacts to the Gwich'in.
44.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	24	Sociocultural Systems	BLM's assessment of negative impacts to subsistence users from industry roads is flawed and should be corrected. ASRC is disappointed BLM did not fully assess this benefit as additional road access and connectivity is supported by nearly every community on the North Slope and the sociocultural benefits of this additional infrastructure have been seen in Canada, Utqiagvik, and Nuiqsut. In Canada, the Dempster Highway is a major subsistence area for indigenous peoples in Canada to harvest the PCH.26 In Utqiagvik, the Barrow Gas Field Road east of the community provides a further jumping off point for subsistence users. This has become a highly used road for subsistence purposes and has provided convenient access to an otherwise low-use area. BLM evaluated roads in and around Nuiqsut as countervailing impacts in the Greater Mooses Tooth Two Final Supplemental Environmental Impact Statement which should be incorporated in the EIS. The industry roads across the North Slope used by subsistence users provide good analogues and data as to how subsistence users may benefit from additional road access in the Coastal Plain.	Text has been added regarding potential benefits of road access, citing recent data on use of roads by Nuiqsut hunters.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	24	Sociocultural Systems	This benefit is particularly relevant in the Program Area as subsistence users are restricted from accessing much of the Coastal Plain in the summer months, local subsistence users access to industry roads would expand their current subsistence range beyond Native owned lands and river areas.	Text has been added regarding potential benefits of road access, citing recent data on use of roads by Nuiqsut hunters.
46.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	25	Sociocultural Systems	27 Greater Mooses Tooth Two Final Supplemental Environmental Impact Statement, BLM. Page 433. " Residents see certain roads, especially the community's currently planned Colville River Access Road, as valuable for facilitating access for hunters...Hunters who only have road vehicles or who are less active (e.g., have less time to go on longer hunting trips) also benefit from road access."	Text has been added regarding potential benefits of road access, citing recent data on use of roads by Nuiqsut hunters.
47.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	25	Sociocultural Systems	Moreover, recent studies from Stephan R. Braud assessing the Spur Road demonstrate that subsistence users do in fact utilize industry roads. 27 BLM should capture this trend in their analysis and consider how additional access to industry infrastructure may alleviate the valid concerns by the people of Kaktovik that their access is restricted by the presence and management of the refuge.	Text has been added regarding potential benefits of road access, citing recent data on use of roads by Nuiqsut hunters.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	30	Sociocultural Systems	Kaktovik is the impacted community and the impacted people are the Kaktovikmiut. In both the Cultural Resources and Sociocultural System, ASRC found that the information provided and analyzed was lopsided in its focus on the Gwich'in. While interesting, ASRC does not understand how such an extensive history of the Gwich'in first interactions with Christian missionaries (DEIS pg 3-186) and establishment of the Hudson Bay Trading Company at Fort Yukon (DEIS pg 3-184) is relevant to this NEPA process. If BLM intends to keep this extensive history of the Gwich'in in the EIS, BLM should also include the Gwich'in peoples own pursuits for oil and gas leasing 1.8 million acres (an area larger than the proposed Program Area) for development in ANWR32 in the 1980s.33	This is a brief (five paragraph) overview of the history of the Gwich'in, highlighting key historic events which shaped the current communities. Did not include mention of oil and gas leasing efforts by Venetie as this occurred decades ago and is not relevant to the current baseline of sociocultural systems in the community as oil and gas development did not occur. Additional text has been added to ensure importance of the area to Kaktovik is adequately represented.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	31	Sociocultural Systems	ASRC objects to the biased representation of the Gwich'in People's role in preserving the Program Area (DEIS pg 3-183). The Kaktovikmiut are the actual residents of the Program Area and the stewards of this land from time in memorial. It is offensive to the Iñupiat people for BLM to parrot this talking point that those whom do not live in the Program Area have decided to promote throughout this public process. BLM should adjust their analysis and remain focused on the impacted community.	Additional information regarding the history of Kaktovik has been included. As noted, previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.
50.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	1	Sociocultural Systems	We feel that in light of the new parameters informing the timing of the NEPA process and the length of the document, the BLM should prioritize local concerns, first and foremost.	Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.
51.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	2	Sociocultural Systems	VOICE hopes that as the BLM finalizes an EIS for a leasing program, the agency will work to address outstanding issues raised by the Kaktovikmiut, correct past wrongs to the community of Kaktovik on behalf of the federal government, and re-evaluate how the Iñupiat culture, specifically that of the Kaktovikmiut, is represented and discussed in the document	Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
52.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	8	Sociocultural Systems	3. Pg. 3-183 - Gwich'in People VOICE objects to this section, which we feel presents a biased and insulting representation of the Gwich'in people's role in preserving the 1002 Area. The Iñu-piat people have an ageless respect and concern for our land combined with centuries of perspective. The Kaktovikmiut are the actual residents of the Coastal Plain and are more determined than any other stakeholder to protect their lands, and the traditional lifestyle they support, for the benefit of future generations. To suggest otherwise is insulting to our culture and traditions, and an in-credibly selective narrative given resource development activities on Gwich'in lands.	All study communities are addressed in the affected environment, as this section is meant to describe the current baseline conditions of potentially affected communities. Differences in how sociocultural systems will be affected are discussed in the Direct and Indirect Impacts section and impact discussions are focused on potential direct impacts to the Iñupiat (particularly Kaktovik). Importance of the program area, including the stewardship role of the Kaktovikmiut, is addressed under "Belief Systems." Additional text has been included to ensure the importance of the area to the Iñupiat is adequately stated.
53.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	11	Sociocultural Systems	5. Pg. 3-190 "Increased access to program-related roads, introduction of new infrastructure in traditional use areas, and associated changes in subsistence travel routes and harvesting patterns could increase the risk of injuries and accidents during subsistence activities, causing negative social effects." This should be justified with data or removed. As stated, it seems to suggest that roads are not in use in Kaktovik and in all communities on the North Slope; that the Iñupiat people are somehow unqualified to drive and use them. Overall, very few injuries happen on roads in the North Slope.	Text has been revised to identify the increased potential for injury both on and off roads related to interaction with industrial infrastructure and traffic in addition to resulting changes in travel routes -- not related to general use of roads by the Iñupiat.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	12	Sociocultural Systems	6. Pg. 3-192 "Increased interactions with outsiders in traditional use areas and communities has the potential to affect traditional values and belief systems over time and may also result in increased social problems, if such interactions lead to greater access to drugs and alcohol." Again, please justify this statement or remove it from the EIS. Kaktovik has hundreds of visitors to their communities every year. All North Slope communities have chosen to restrict access to alcohol and are considered "dry villages." These measures have been found, in multiple studies, to be associated with lower rates of alcohol-related injuries and other morbidities. ⁸ Importing alcohol to any North Slope community is a very serious offence punishable by jail time. Additionally, industry has a strict zero tolerance policy for drugs and alcohol, conducts regular random drug testing of employees, and those who violate the rules are subject to immediate termination.	The sentence has been removed as requested
55.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	35	Sociocultural Systems	VOICE recommends that the BLM consider adding language in to the Final EIS that encourages future lessees to work with the City of Kaktovik and the NSB on ways to incorporate the potential for natural gas to the community of Kaktovik.	This is outside the scope of the EIS.
56.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	42	Sociocultural Systems	As the BLM moves toward finalizing their EIS for a leasing program, we hope that you will work to center the community of Kaktovik, which has the most at stake; work to correct culturally insensitive sections of the EIS; more clearly explain how development has benefitted the people of the North Slope; and work within the Bureau and Department of Interior as a whole to find solutions for land access issues that have plagued the community since the expansion of ANWR.	Text identified as culturally insensitive has been addressed. USFWS is the surface manager of the Coastal Plain of the Refuge, and manages access for all non-oil and gas activities. Where it pertains to a potential lease, and implementation of the oil and gas leasing program, all action alternatives include lease stipulations and ROPs that are specific to maintaining access, and developing subsistence access plans where applicable as a result of a lease agreement.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Matt	Krogh	Stand.earth	83321	5	Sociocultural Systems	Despite all its flaws, it is heartening to see the DEIS acknowledge the Gwich'in and the importance of subsistence and caribou to their cultural identity and way of life. Unfortunately, acknowledgement is where the DEIS ends. The DEIS identifies potential sociocultural impacts of oil and gas development, but fails to quantify or further explain those potential impacts. The DEIS needs to fully assess the sociocultural impacts of drilling in the Arctic Refuge	The level of detail is appropriate to the analysis of a hypothetical development scenario. Due to their nature, sociocultural impacts are difficult to quantify. Accordingly, most such impacts are analyzed qualitatively.
58.	Constance	Voget	—	80739	2	Sociocultural Systems	My comment concerns the section of the DEIS entitled, "Influx of Non-Resident Temporary Workers and Outsiders," page 3-190. This section fails to name the risk of increased occurrence of violence against Alaska Native women and girls. A briefing paper of 10/15/18, in Section C, entitled "Impact of Extractive Industries on the Safety of American Indians and Alaska Native Women in the United States," page 10, states: "Oil and gas development on and near tribal lands raises the already high risk that American Indian and Alaska Native women and girls will become victims of violence, murder and sex trafficking." (In "Violence Against American Indian and Native Alaska Women in the United States," Briefing Paper for Thematic Hearing held during the Inter-American Commission on Human Rights, 169th Period of Session. October 5, 2018. University of Colorado Law School. Submitted by Alaska Native Women's Resource Center, Indian Law Resource Center, National Congress of American Indians, National Indigenous Women's Resource Center. The briefing paper identifies as the main risk factor the influx of out of area workers, many housed in complexes known as "man camps." That tribes lack criminal jurisdiction over non-Indians who commit crimes means Native women and girls go without protection from tribal government. The U.S. Federal Government has largely	Added text to the Sociocultural Systems section acknowledging the high rates of sexual assault and domestic violence against Alaska Native women and addressing the potential for an increase in social problems, including domestic and other violence, associated with increased outsiders in the region.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	failed to respond to this crisis of violence. The findings of the United Nations' Permanent Forum on Indigenous Issues in 2012 state: "...extractive industries operating in indigenous territories with insufficient oversight often detrimentally impact indigenous woman and girls with respect to sexual assault and sex trafficking." The fact that some oil and gas workers commit with near total impunity horrific acts of violence against American Indian and Native Alaska women and girls is shocking and sickening and not to be tolerated. The BLM must face up to this appalling situation in its evaluation of impacts related to the proposal about oil and gas drilling.	(see above)
59.	Rhonda	Anderson	—	98138	2	Sociocultural Systems	Adding man camps to our vulnerable population will see a rise in rape, sexual assaults, drug and crime, in our already vulnerable communities	The Sociocultural Systems section addresses the potential for increased drug and alcohol associated with an increase in outsiders in the region. Added text to the Sociocultural Systems section acknowledging the high rates of sexual assault and domestic violence against Alaska Native women and addressing the potential for an increase in social problems, including domestic and other violence, associated with increased outsiders in the region.
60.	Withheld	Withheld	—	90947	5	Sociocultural Systems	The DEIS ignored the traditional knowledge and human rights of the Gwich'in	The EIS incorporates Gwich'in traditional knowledge relevant to the program area and PCH where appropriate in the subsistence section. Much of the description of sociocultural systems (particularly "belief systems") is based on traditional knowledge of local residents. Added reference to the importance of traditional knowledge to Gwich'in under "Social and Political Organization" subsection in Section 3.4.4.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Janee	Middlesworth	—	91927	3	Sociocultural Systems	The DEIS fails to address this reality and its effects on indigenous people.	Comment acknowledged. The EIS text in Section 3.4.4 has been revised in response to Draft EIS comments.
62.	Withheld	Withheld	—	92034	8	Sociocultural Systems	The Gwich'in people of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Arctic Refuge Coastal Plain for calving and post-calving habitat. Because of this connection, the Gwich'in consider the Coastal Plain to be sacred and believe that protecting the Arctic National Wildlife Refuge is vital to their human rights and food security. A significant portion of Gwich'in subsistence comes from the Porcupine Caribou Herd, BLM concluded that there will be no impact on the Gwich'in subsistence food source, even while acknowledging oil and gas impacts on caribou. BLM asserted that the Gwich'in do not qualify for an 810 hearing (necessary under the Alaska National Interest Lands Conservation Act), which is required for development that will substantially affect subsistence. The DEIS ignored the traditional knowledge and human rights of the Gwich'in.	Section 3.4.3 recognizes the importance of PCH to the Gwich'in and the potential impacts to Gwich'in subsistence use of the PCH as an impact common to all alternatives. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Withheld	Withheld	Government of the Northwest Territories	92862	75	Sociocultural Systems	The draft EIS does not include in their analysis a detailed discussion of the ethnographic cultural resources of the Indigenous Porcupine Caribou herd subsistence users in the Northwest Territories or potential mitigative measures that could be included in Alternatives B, C, and D to lessen the severity of these impacts. Recommendation The GNWT recommends the BLM include in their analysis a discussion of the ethnographic cultural resources of the Indigenous PCH subsistence users in the Northwest Territories and the potential impacts (direct, indirect, as well as cumulative) that the project may have on these ethnographic cultural resources. This includes an analysis and discussion of: the traditional use of the PCH; the relation of the health and harvesting of the PCH to spirituality and cosmology; and the importance of harvesting caribou to the identity, traditional skills, Indigenous knowledge, and way of life of the Indigenous peoples of the Northwest Territories. It is recommended that BLM indicate what appropriate mitigations will be applied to ensure that negative direct, indirect, or cumulative impacts as a result of the project and activities associated with the leasing program do not negatively impact NWT Indigenous communities.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	2	Sociocultural Systems	According to the DEIS, "for the purposes of this analysis, there are four primary subsistence study communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie. They are the closest to the program area and have subsistence uses in or near the program area or rely heavily on resources that use the program area. ³ It is demonstrably false that these are the four communities closest to the program area, as Old Crow is nearer to the Coastal Plain than Venetie. The BLM provides no rationale for excluding Old Crow from this analysis, as well as the other Indigenous communities within Canada that are close to the Coastal Plain and rely heavily on the Porcupine caribou herd. By the BLM's own admission, 85% of Porcupine caribou harvest takes place in Canada. ⁴ It is clear that Indigenous communities within Canada would bear substantial impacts from any activities detrimental to the Porcupine caribou herd. By not comprehensively evaluating the impacts on Canadian communities the BLM is ignoring some of the most serious consequences from oil and gas activities within the Arctic Refuge.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Amy	Law	Government of Yukon	94076	25	Sociocultural Systems	In addition to providing a source of food, the harvesting of caribou is an activity with cultural, health, and recreational value. Individual and community well-being is supported and enhanced through participation in traditional activities (e.g., increasing or protecting cultural, intergenerational and community connectedness, and building or enhancing a sense of accomplishment or self-sufficiency). Further, the act of harvesting itself is a form of physical activity that provides health benefits. Impacts on the availability of caribou could result in an increased need for and use of social services (e.g. income supports; mental health services). Health services may also be impacted over the long-term, due to the risk of increased obesity and related chronic diseases that have been associated with a shift towards market-based foods among Indigenous communities. The draft EIS fails to quantify or propose mitigations to prevent a shift towards market-based foods in Canadian communities as a result of either declines in caribou availability or declines in caribou health as a result of industrial development. It also fails to quantify or propose mitigations at the individual or community scale for this erosion of strong cultural links to a vibrant herd through harvesting. These are significant deficiencies.	Mitigation to protect caribou and their use as subsistence resources identified in Section 2, and should prevent declines from the proposal that would require shift to market-based food. In addition, when projects are proposed, site specific mitigation measures may be implemented to ensure the subsistence uses and resources are protected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	29	Sociocultural Systems	opportunities and availability of subsistence areas may become limited because of harm to the Porcupine Caribou Herd through infrastructure, other disturbances during the calving, post-calving, or insect relief periods, alterations to the migration path, and reduced subsistence resources, all of which also may impact sharing networks. The initial reduction of traditional use areas will limit the ability to pass on traditional knowledge to our younger generations and traditional use and knowledge of the use areas will be lost. This impact to our way of life will be permanent, and the loss of knowledge alone is a significant subsistence and cultural impact that BLM failed to analyze.	Potential impacts to the availability of PCH caribou, in addition to impacts to traditional uses and traditional knowledge, are discussed under Subsistence. The Lease Stipulations and ROPs (ROP) in Section 2 of the EIS describe measures to mitigate effects to subsistence resources including and prevent unreasonable conflict with subsistence activities. For example, Lease Stipulation 6 minimizes disturbance and hindrance of PCH and alteration of their movements. Stipulation 7 and 8 protects the PCH primary calving habitat areas and post calving area.
67.	Alice	Levine	—	94086	5	Sociocultural Systems	This DEIS ignores the traditional knowledge of the Gwich'in and Iñupiat, whose roots go back 12,000 years; the Alaska Native/First Nations peoples say that any development in the program area would have devastating effects on the population of the Porcupine Caribou Herd, migratory birds, and fish. This knowledge has been passed down through generations, and they have seen the effects of oil and gas development on the rest of the North Slope.	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. Where available, the analysis makes extensive use of this information, for example, the subsistence information from SRB&A and others was developed with extensive community involvement in all phases of the study. Similarly, the study of sharing networks by Kofinas, et. al., 2016 was developed using TK/LK.
68.	—	—	Alaska Department of Natural Resources	94102	68	Sociocultural Systems	44 Chapter 3.4.4, Sociocultural Systems, Page 3185 Correction The reference to Nalukataq states "One of the most important ceremonies on the coast was the whale feast." This festival remains very important on the North Slope and is continued to be held by successful whaling captains in all communities.	Text has been edited to indicate the feast is still important

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Withheld	Withheld	—	94436	1	Sociocultural Systems	It is as essential to take into account the multigenerational damage which would be caused by the current plan. Though it may be adequate to satisfy the current need for resources, it fails to address the concerns of future generations of Alaskan and United States citizens.	Text has been revised to acknowledge that some impacts could extend for multiple generations
70.	Withheld	Withheld	—	94593	6	Sociocultural Systems	No studies have been done on the potential socio-cultural impacts of leasing on the local Native populations	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
71.	Withheld	Withheld	—	94593	12	Sociocultural Systems	the residents of Kaktovik are right to demand and should be provided long-overdue support for housing, health, and education, and cultural/subsistence preservation, but that support should not be tied to oil and gas leasing in the 1002 area - it should be provided no matter what.	This is outside the scope of the EIS.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	Edward	Rexford	Native Village of Kaktovik	95607	2	Sociocultural Systems	Generally, NVK feels that the DEIS would benefit from closer alignment with other recently completed EIS's on the North Slope, namely the 2012 Point Thomson EIS and the 2013 NPR-A IAP/EIS, which present a much more clear, accurate, and well-rounded picture of the history of Kaktovik, Iñupiat subsistence values, and our relationship with our environment. Of particular note is the false narrative that the DEIS presents in the lopsided discussion of impacts to Gwich'in communities; mistakenly inferring that those communities, hundreds of miles and a mountain range away from the Program Area, have at much at stake as our community, which is within the bounds of the Program Area.	Additional information regarding the history of Kaktovik has been included. As noted, previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Edward	Rexford	Native Village of Kaktovik	95607	8	Sociocultural Systems	The DEIS has introduced a strange duality in legitimizing Arctic Village and Venetie's claim to the 1002 Area, though Map 3-44 "Arctic Village and Venetie Subsistence Use Areas" proves that even prior to the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 those communities did not use the Coastal Plain for subsistence. The maps clearly show that the traditional use areas for these two communities remained south of the continental divide in the Brooks Range. Kaktovik, through ANILCA, is limited in our access to our own traditional use areas including allotments, campsites, important subsistence areas, and cultural and historic sites. The BLM has been clear in their response that rectifying this wrong is beyond the jurisdiction of the agency; and yet, the BLM has allowed communities that do not even claim traditional use of the Coastal Plain to hijack this process. The DEIS as presented is lopsided in its focus on the Gwich'in, who do not live within the 1002 area nor ANWR in its entirety. The BLM should adjust their analysis and remain focused on the impacted community.	The Draft EIS does not identify that Arctic Village and Venetie have subsistence uses in the program area, but recognizes their reliance on subsistence resources that use the Coastal Plain and the Coastal Plain having sacred importance to their culture. Previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Edward	Rexford	Native Village of Kaktovik	95607	17	Sociocultural Systems	Pg. 3-183 - "Gwich'in People" NVK strongly objects to this biased representation of the preservation of the Program Area. Our people are the actual residents of the 1002 Coastal Plain and we have lived here since time immemorial. We consider ourselves the stewards of this land as we have been for generations; any suggestions to the contrary are culturally insensitive and paternalistic. The narrative presented here is extremely selective; as mentioned and cited in a previous section, the Gwich'in people sought to lease the entirety of the 1.8 million acre Venetie Indian Reservation to oil and gas development. Not including this historical perspective seems to consciously bias one indigenous group over another, presents a false dichotomy of "for development" Alaska Natives and "against development" Alaska Natives, and must be corrected.	All study communities are addressed in the affected environment, as this section is meant to describe the current baseline conditions of potentially affected communities. Differences in how sociocultural systems will be affected are discussed in the Direct and Indirect Impacts section. The EIS does not include mention of oil and gas leasing efforts by Venetie as this occurred decades ago and is not relevant to the current baseline of sociocultural systems in that community. Importance of the program area, including the stewardship role of the Kaktovikmiut, is addressed under "Belief Systems." Additional text has been added to the introduction to ensure the importance of the program area to Kaktovik is clearly stated
75.	Edward	Rexford	Native Village of Kaktovik	95607	18	Sociocultural Systems	Pg. 3-190 The DEIS states "Increased access to program-related roads, introduction of new infrastructure in traditional use areas, and associated changes in subsistence travel routes and harvesting patterns could increase the risk of injuries and accidents during subsistence activities, causing negative social effects." Please provide data to support this claim or remove. Kaktovik already has roads and few, if any, injuries occur on roads. Iñupiat people are capable of operating on roads; we train for, take driving tests, and are required to have driver's licenses like people in all other communities.	Text has been revised to identify the increased potential for injury both on and off roads related to interaction with industrial infrastructure and traffic in addition to resulting changes in travel routes -- not related to general use of roads by the Iñupiat.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
76.	Edward	Rexford	Native Village of Kaktovik	95607	19	Sociocultural Systems	Pg. 3-192 The DEIS states "Increased interactions with outsiders in traditional use areas and communities has the potential to affect traditional values and belief systems over time and may also result in increased social problems, if such interactions lead to greater access to drugs and alcohol." This assertion seems baseless, please qualify this statement or remove it. Kaktovik has hundreds of visitors through polar bear viewing tours and other activities. The DEIS states elsewhere that workers are likely to be housed at camps outside of the village and are likely to have minimal interactions with community members. Additionally, industry has an extremely strict zero-tolerance policy to drugs and alcohol.	The sentence has been removed as requested

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	Edward	Rexford	Native Village of Kaktovik	95607	21	Sociocultural Systems	Pg. 3-199 - Sociocultural Systems The DEIS states "Because of the particular spiritual and cultural importance of the coastal plain and the PCH calving grounds to the people of Arctic Village and Venetie, any disruption to that herd or contamination or degradation of calving grounds in the program area would have potential sociocultural impacts on the Gwich'in people, in terms of their belief system and cultural identity." NVK strongly objects to the insinuation that the Coastal Plain has more spiritual and cultural significance to the people of Arctic Village and Venetie than to the Kaktovikmiut people. These are lands that we have inhabited, used for hunting, fishing, gathering, and raised our families on for over 11,000 years. The footsteps of our people are all over the Coastal Plain, our ancestors are buried here, and generations of Kaktovikmiut will use, survive, and thrive off this land long after we are gone. Bowhead whales are central to our people's culture and are known to calve in the Bering Sea before they start their migration north into the Arctic. We Iñupiat do not seek to claim spiritual and cultural significance for our people to lands in the Kamchatka Peninsula or on the Aleutian Island chain at the expense of people who have lived there for generations. The BLM must be careful to separate objective facts from these subjective talking points making false claims that have been brought forth throughout the public process to oppose oil and gas development in the 1002 Area; it is offensive to us as Kaktovikmiut people for the BLM to legitimize these claims.	The cultural, ancestral, and spiritual attachment of the Gwich'in to the Coastal Plain has been documented in the literature and is a scoping issue that must be addressed in the EIS. In addition, the program area is directly north of Gwich'in caribou hunting areas and therefore there is potential for indirect impacts to caribou availability for the Gwich'in. However, the section has been reviewed and edited to ensure that it does not suggest that the Gwich'in have greater spiritual/cultural ties to the Coastal Plain than the Iñupiat.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
78.	Harry K.	Brower Jr.	North Slope Borough	95612	5	Sociocultural Systems	Thus, the needs and concerns of Kaktovik residents must be given greater consideration in the decision making process for ANWR than other communities or groups that are not directly affected.	Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected. ROP 36, Subsistence Consultation for Permitted Activities, explicitly does require the applicant to work directly with the Native Village of Kaktovik
79.	Harry K.	Brower Jr.	North Slope Borough	95612	49	Sociocultural Systems	While the DEIS includes a robust discussion of the history, culture, and way of life of both the Iñupiat and the Gwich'in, BLM should be mindful that it is the residents of Kaktovik that may be most impacted by development in the Coastal Plain. As such, BLM's analysis should focus on the community of Kaktovik, and the needs and concerns of its residents must be given greater consideration than other communities or groups that are not directly affected.	Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected. ROP 36, Subsistence Consultation for Permitted Activities, explicitly does require the applicant to work directly with the Native Village of Kaktovik

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Withheld	Withheld	—	95748	1	Sociocultural Systems	Thirdly, the agency cannot gauge the effects on the Porcupine Caribou Herd without complete and accurate information. This includes addressing gaps in current Western scientific data and incorporating the traditional knowledge of the peoples who have practiced subsistence living in the area since time immemorial.	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. Where available, the analysis makes extensive use of this information, for example, the subsistence information from SRB&A and others was developed with extensive community involvement in all phases of the study. Similarly, the study of sharing networks by Kofinas, et. al., 2016 was developed using TK/LK. Additionally, the Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
81.	Josie	Lopez	—	96188	5	Sociocultural Systems	4) Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which would have significant ramifications over a vast area of Alaska and Canada, and these effects would persist beyond the estimated 130 years of exploitation. The DEIS fails to address this reality and its effects on indigenous people.	Comment acknowledged. The EIS text in Section 3.4.4 has been revised in response to Draft EIS comments.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
82.	Rochelle	Adams	—	98088	1	Sociocultural Systems	And how can you have this DEIS when, you know, it doesn't include any of those things that they have shared? It doesn't include the stories, these connections to the land, you know, this sacred place where life begins. How can you know that when you don't even hear a word that they have said in their language	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. Where available, the analysis makes extensive use of this information, for example, the subsistence information from SRB&A and others was developed with extensive community involvement in all phases of the study. Similarly, the study of sharing networks by Kofinas, et. al., 2016 was developed using TK/LK.
83.	Jody	Potts	—	98119	1	Sociocultural Systems	I'd also like to see an indigenous perspective in the EIS, the indigenous experts and -- to be included in that information, to be weighed equally with our other experts	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. Where available, the analysis makes extensive use of this information, for example, the subsistence information from SRB&A and others was developed with extensive community involvement in all phases of the study. Similarly, the study of sharing networks by Kofinas, et. al., 2016 was developed using TK/LK.
84.	Rhonda	Anderson	—	98138	13	Sociocultural Systems	As we feel it and see it, we value our subsistence, our land, our resources, and we're starting to see more fish like this caught in the fall, all 16 of them." And she sent a picture, and all the fish had different types of wounds on them. They were basically falling apart. They were not healthy fish.	Comment acknowledged.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
85.	Brook	Brisson	Trustees for Alaska	98270	52	Sociocultural Systems	BLM's failure to comply with International Porcupine Caribou Herd Treaty requirements renders its sociocultural background discussion and analysis deficient. As explained above, BLM fails to comply with international treaty obligations by not being transparent about its consultation with the Porcupine Caribou Board. This deficiency results in significant risk to the Canadian subsistence users' nutritional, cultural, and other essential needs. The Canadian Gwich'in, in northern Yukon and Northwest Territories, rely heavily on the Porcupine Caribou Herd, and have previously accounted for up to 85 percent of the harvest. ¹⁶⁷² The DEIS recognizes "seven Canadian user groups of the [Porcupine Caribou Herd]: Inuvialuit (Aklavik, Inuvik, and Tuktoyaktuk), Northwest Territory (NWT) Gwich'in people (Aklavik, Inuvik, Fort McPherson [Tetlit Zeh], and Tsiigehtchic), Vuntut Gwich'in people (Old Crow), Tr'ondek Hwech'in (Dawson City), Nacho Nyak Dun (Mayo), and other residents living in the Yukon Territory and the NWT." ¹⁶⁷³ By not being transparent about the consultation process, BLM fails to not only comply with international treaty obligations, but fails to acknowledge or consider the cultural values Gwich'in in the Yukon and Northwest Territories in the DEIS. As a result, BLM fails meaningfully to consider the impacts on affected communities in Canada, who represent over half of the Herd's use will experience impacts related to their food security, nutrition, spiritual, and other essential needs.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Brook	Brisson	Trustees for Alaska	98270	53	Purpose and Need	Broadly, the DEIS does not adequately incorporate the values of the affected communities into the analysis. When considering important values in the abstract, the DEIS states that BLM's proposed oil and gas program opens 66%-100% of the Coastal Plain to leasing, "while balancing biological and ecological concerns."1674 BLM specifically fails to mention impacts to human-based resources, including subsistence, cultural resources, sociocultural values, and spiritual beliefs. These impacts must be considered as well.	Text has been added where appropriate to further reflect social considerations.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
87.	Brook	Brisson	Trustees for Alaska	98270	54	Sociocultural Systems	The DEIS's analysis of Alternative C is similarly substantially lacking. The entirety of analysis for Alternative C states: The types of potential impacts under Alternative C would be the same as those described under Alternative B. Because fewer acres of calving grounds would be available for leasing, the intensity of potential sociocultural impacts related to caribou under Alternative C would be less than Alternative B.¹⁶⁷⁷ This analysis is problematic for a myriad of reasons. First, it is incorrect that under Alternative C less calving acreage is offered - alternatives B and C offer the same acreage in the same areas for lease. The DEIS acknowledges in Alternative B that any disruption, perceived harm, contamination, or degradation to the Porcupine Caribou Herd's calving grounds will have a sociocultural impacts to the Gwich'in people.¹⁶⁷⁸ But BLM does not explain why it believes that the "intensity of potential sociocultural impacts related to caribou" would be less under Alternative C given the importance of the entire Coastal Plain to caribou and the Gwich'in.¹⁶⁷⁹ Additionally, BLM cannot claim reduced impacts to the Gwich'in people's identity, as any harm to the Coastal Plain will constitute an impact to the Gwich'in based on their traditional knowledge.	Discussion regarding Alternative C impacts has been clarified to address commenter's concerns

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
88.	Brook	Brisson	Trustees for Alaska	98270	55	Sociocultural Systems	Second, this analysis [Alternative C] does not distinguish which caribou herd may have reduced "potential sociocultural impacts." ¹⁶⁸⁰ Both the Porcupine Caribou Herd and the Central Arctic Herd are affected by oil and gas leasing and the availability of both herds is tied to subsistence and sociocultural activities. Impacts on the community of Nuiqsut, which relies on the Central Arctic Herd is not mentioned in this comparison. Third, the analysis to caribou must not only clarify and examine the impacts to both the Porcupine Caribou Herd and the Central Arctic Herd, but the analysis must be robust, and consider how the diminished availability of caribou for subsistence purposes alters sociocultural impacts on the Gwich'in, who rely heavily on the Porcupine Caribou Herd.	Discussion regarding Alternative B impacts has been revised to address commenter's concerns regarding impacts to CAH and Nuiqsut sociocultural systems
89.	Brook	Brisson	Trustees for Alaska	98270	56	Sociocultural Systems	The analysis for Alternatives D1 and D2 are similarly deficient. BLM merely states the "intensity of potential sociocultural impacts" will be different under the alternatives, but provides no analysis that would allow the differences in the alternatives to be meaningfully considered. ¹⁶⁸¹	Because of the broad nature of the hypothetical development scenario and the lack of detailed project descriptions, it is not possible to provide in-depth analyses of differences in impacts on sociocultural systems. Because a primary driver of impacts to sociocultural systems is potential impacts to subsistence resource availability and access, the analysis references the conclusions of the subsistence and wildlife (particularly terrestrial mammal) sections. References to those sections were added and text was added to clarify that impacts would be similar across all alternatives with the exception of impacts to caribou availability:

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
90.	Brook	Brisson	Trustees for Alaska	98270	57	Sociocultural Systems	BLM also arbitrarily and improperly limits the scope of its sociocultural systems analysis in the same way it improperly limited the scope of its NEPA analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.1684 BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use and resources that could occur from the entire oil and gas program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain.	Seismic exploration can be done absent a lease (a lease is not required). Even if areas are not available for lease, companies may conduct seismic exploration there. Separate NEPA analysis would be completed for all seismic exploration applications, which would analyze the site specific impacts. Prelease activities such as seismic surveys go through a separate rigorous NEPA analysis. Effects from these surveys, if they take place prior to leasing are properly analyzed as part of cumulative effects. The EIS does address mitigation for seismic exploration and subsistence with ROP 36 and 37.
91.	Brook	Brisson	Trustees for Alaska	98270	58	Sociocultural Systems	BLM's analysis falls short by not considering transboundary effects, and therefore the sociocultural repercussions on Gwich'in people who live in the fourteen villages across northern Alaska and Canada. As explained above, BLM is required to take a hard look at all impacts to the affected environment and cutting off this analysis at the Canadian border is improper as the intensity of the impacts are not fully considered. The DEIS does not mention transboundary impacts nor does it consider any sociocultural impacts to Canadian communities such as Old Crow, Aklavik, or Fort McPherson.1686	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
92.	Brook	Brisson	Trustees for Alaska	98270	60	Sociocultural Systems	The section analyzing the changes in income and employment levels focuses on the community of Kaktovik's likely shift of community roles, changing social ties and altering income and employment disparities. It fails to look at the financial impacts to all affected communities, including Gwich'in villages, given the likely impacts to subsistence resource availability and use.	Text has been added to address the particular vulnerability of Gwich'in villages to financial impacts give the lack of countervailing economic benefits.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
93.	Brook	Brisson	Trustees for Alaska	98270	61	Sociocultural Systems	Even though the Gwich'in are not directly adjacent to proposed development, their communities are located along the migratory path of the Porcupine Caribou Herd and the Gwich'in rely on the herd for subsistence. It is therefore improper for the DEIS to suggest that only two of the Gwich'in communities, Arctic Village and Venetie, will be made more vulnerable by receiving none of the "benefits" from financial gain, while incurring impacts to their subsistence lifestyle and cultural identity. As stated above, Canadian Gwich'in communities account for the majority of Porcupine Caribou Herd harvest, and will feel such impacts well and other Gwich'in villages in Alaska hunt and share Porcupine Caribou.1688	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
94.	Brook	Brisson	Trustees for Alaska	98270	62	Sociocultural Systems	The changes in Income and Employment Levels analysis contains a direct contradiction that must be resolved. The DEIS finds that the adjustment away from the current distribution of hunters in "could cause short-term social stresses in a community."1690 This analysis incorrectly downplays the impacts, considering them told be "short term" when in actuality, all alternatives will be impose significant restrictions on subsistence resources and will forever change community dynamics. In fact, when comparing alternatives the DEIS provides that "the duration of impacts would be long term for all types of impacts."1691 BLM must resolve this inconsistency in terms of the gravity and lasting nature of impacts to communities on a timeline consistent with that described above regarding BLM's impacts analysis.	Text has been edited to indicate that the shifts could persist in the long term and deleted reference to "short -term" social stresses.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
95.	Brook	Brisson	Trustees for Alaska	98270	63	Sociocultural Systems	In addition, BLM must explain exactly how increases in employment opportunities are expected to result in a shift away from subsistence activities. The DEIS recognizes that historically very few residents of effected communities hold oil and gas jobs.1692 BLM must reconcile this with the sociocultural analysis which considers changes in social structures will be altered as certain individuals shift to "nonsubsistence roles."1693 BLM needs to further consider the intensity of this impact in order to analyze changes in employment.	The text states that increased income/employment associated with development may cause "certain individuals and households" to shift to new, nonsubsistence roles. The shifting of subsistence roles and decreased time to engage in subsistence activities due to increased employment has been documented in Nuiqsut. However, it is unlikely that employment will result in residents' ceasing all subsistence activities. Text has been edited to clarify new roles may be less focused on subsistence production
96.	Brook	Brisson	Trustees for Alaska	98270	64	Sociocultural Systems	Further, BLM describes a "tipping point" where the impacts to "residents would no longer be able to adjust to such changes [and t]he potential sociocultural impacts of such an occurrence would likely be negative and long term."1694 BLM must identify such points using the best available science to determine the scale and scope of impacts to sociocultural systems. What level of impact results in a tipping point is not further discussed; it needs to be identified to better understand the proposed alternatives and mitigate impacts.	There are no data available which allow the BLM to define an exact point at which residents would not be able to adjust to changes. However, there are data on differences between road-connected and non-road connected communities which indicate a substantial difference in reliance on and participation in subsistence. Text has been added to further elaborate on the potential for more dramatic changes in community subsistence patterns:

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97.	Brook	Brisson	Trustees for Alaska	98270	65	Sociocultural Systems	The DEIS analysis errs by grouping all affected communities together when considering how subsistence uses will be disrupted. By considering all communities together, BLM does not provide a robust analysis for subsistence impacts, as user access and availability will look very different in many communities. For example, Kaktovik will have to directly avoid infrastructure during subsistence activities while Gwich'in communities will likely experience subsistence impacts from altered migratory caribou behavior, lower herd population, and reduced overall animal health. Infrastructure in Kaktovik may force subsistence hunters to change their hunting areas, strategies, and potentially hunting methods.1695 BLM's analysis does not take a hard look at impacts, instead making broad statements about potential impacts on subsistence resource availability. The DEIS must take a detailed look at the sociocultural impacts, which requires so level of differentiation between affected communities.	The sociocultural systems analysis refers to the subsistence analysis, which distinguishes between potentially affected communities when analyzing impacts. In addition, the sociocultural systems analysis indicates direct impacts are most likely to occur for Kaktovik, while indirect impacts may occur for Arctic Village, Venetie, and Nuiqsut. Edited text to ensure the section adequately references the subsistence section. The Draft EIS already distinguishes sociocultural impacts between Iñupiat and Gwich'in, calling out where impacts would be most likely to occur for Kaktovik.
98.	Brook	Brisson	Trustees for Alaska	98270	66	Sociocultural Systems	BLM must account for changing subsistence patterns due to roads.1696 Roads will fragment caribou habitat and the DEIS fails to fully consider the risks roads pose to the Porcupine and Central Arctic Caribou Herds. BLM's current caribou analysis is deficient for failing to account for the reasonably foreseeable impacts to the herds and by neglecting to address issues such as snowdrifts along roads which delay and reduce the availability of local forage for caribou.1697 BLM needs to address these concerns with the best available science. After BLM updates this analysis and clearly explains the consequences for caribou, the DEIS must be further updated to reflect the subsequent sociocultural implications to caribou.	Sociocultural systems has been updated in response to updated wildlife chapter

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
99.	Brook	Brisson	Trustees for Alaska	98270	67	Sociocultural Systems	BLM must fully address the implications of impacts to bowhead whales and other marine mammals for subsistence access and the subsequent sociocultural implications that stem from reduced sharing practices and passing of traditional knowledge. The DEIS's environmental justice section acknowledges that there are impacts to subsistence use of bowhead whales and other marine mammals from oil and gas activities.1698 Hunters are required to travel further as a result of noise and traffic.1699 Reduced harvest of whales would interrupt and alter sharing and trading networks with different communities and regions in Alaska and Canada.1700 The DEIS fails to account for any of these impacts and merely concludes that large vessel traffic could temporarily disturb or displace whales or bearded/ringed seals. Generally, the DEIS notes that negative social consequences will result if harvest of key resources, such as bowhead whales are reduced, but does not analyze the likelihood and severity of these impacts.1701	The subsistence section of the Draft EIS addresses potential impacts to availability of bowhead whales and other marine mammals. Based on the conclusions of the marine mammals section and assuming that CAAs will be in place, the subsistence section concludes that impacts to marine mammal resource availability resulting from development of the program area would be minimal. Added additional text to clarify the likelihood of these types of impacts to marine mammals and associated uses
100.	Brook	Brisson	Trustees for Alaska	98270	68	Sociocultural Systems	BLM makes brief mention, but fails to provide actual analysis about how reduced availability of subsistence resources may cause tensions between user groups who harvest the Porcupine Caribou Herd.1702 There is no description for how BLM foresees these conflicts developing, how they will play out, and what larger implications they may have on social cohesion. The Porcupine Caribou Herd and Central Arctic Herd are harvested by twenty-two communities in total. BLM should analyze and describe how the reduction of resources will change social dynamics amongst communities.	Mitigation to protect caribou and their use as subsistence resources identified in Section 2, and should prevent the reduction of resources being available. In addition, when projects are proposed, site specific mitigation measures may be implemented to ensure the subsistence uses and resources are protected.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
101.	Brook	Brisson	Trustees for Alaska	98270	69	Sociocultural Systems	As separate peoples with unique beliefs, histories, and traditions, BLM should provide robust independent analysis of cultural impacts to the Iñupiat and Gwich'in people. The DEIS considers how Disruptions to Subsistence Activities and Uses will degrade social ties and cohesion universally for both the Iñupiat and Gwich'in. While disruption is inevitable in both cultures, it is improper to consider the impacts in such broad strokes. For example, the Iñupiat of Kaktovik will experience changes from structural development around their community and reductions in availability of terrestrial and marine species. Alternatively, Gwich'in communities will see impacts to the Porcupine Caribou Herd and may have to travel farther, and utilize different locations for subsistence harvest. As currently written, the DEIS errs by failing to consider the distinctive impacts to Iñupiat and to Gwich'in people from disruptions to their subsistence activities.	The subsistence section provides more detail on differences in impacts to subsistence resource availability by community. Added summary text to sociocultural systems section that distinguishes the impacts between Iñupiat and Gwich'in people.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Brook	Brisson	Trustees for Alaska	98270	70	Sociocultural Systems	The DEIS does not sufficiently consider decreased ability to participate in the cultural practices of sharing and processing of subsistence resources. The DEIS notes that for Kaktovik Iñupiat residents “[s]haring the harvest is an important objective in subsistence lifestyles; 42 percent of households shared half or more of their harvests with others in the community.” ¹⁷⁰³ Similarly, “Nuiqsut residents consider sharing to be central to their identity; the bowhead whale hunt, in particular, centers on sharing, as evidenced by the 97 percent of households who receive bowhead whale meat annually.” ¹⁷⁰⁴ Gwich'in culture utilizes sharing networks which are important to for resiliency and community - sharing not only with other Gwich'in, but Iñupiat communities as well. ¹⁷⁰⁵ Even though the DEIS recognizes the existence and importance of sharing networks, there is no actual analysis that considers how these networks might be altered from oil and gas development on the Coastal Plain. BLM must provide a robust analysis of how oil and gas development will alter sharing networks.	The subsistence section provides some analysis of potential impacts to sharing networks. In general, data are not available to provide a robust analysis of how oil and gas development will alter sharing networks. Kofinas et al. (2016) notes that “community resilience is a dynamic process that is difficult to predict a priori, especially given the tremendous capacity for human agency.” Added more detailed discussion of potential impacts to sharing networks based on Kofinas et al. (2016) impact scenarios in Section 3.4.3 Subsistence and referenced those conclusions in Section 3.4.4 Sociocultural Systems.
103.	Brook	Brisson	Trustees for Alaska	98270	71	Sociocultural Systems	The Gwich'in people are spiritually connected and inexorably tied to the Porcupine Caribou Herd, and thus the Coastal Plain as the calving and post-calving habitat of the Herd. ¹⁷⁰⁶ The DEIS recognizes the Gwich'in and Porcupine Caribou Herd relationship, ¹⁷⁰⁷ but does not interweave the serious and detrimental effects from development on the Coastal Plain to the Gwich'in people's spirituality into the sociocultural analysis.	This information has been provided in public meetings; this information has been provided consistently throughout the NEPA process and the EIS explains this.
104.	Brook	Brisson	Trustees for Alaska	98270	73	Sociocultural Systems	By not analyzing the significant impacts to Gwich'in spirituality, BLM does not acknowledge the full scope of negative social consequences for the Gwich'in people.	This information has been provided in public meetings; this information has been provided consistently throughout the NEPA process and the EIS explains this.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	Brook	Brisson	Trustees for Alaska	98270	74	Sociocultural Systems	The DEIS cumulative analysis errs by not adequately considering past, present, and foreseeable future impacts on sociocultural systems. The section purporting to assess cumulative impacts on sociocultural systems acknowledges that in the cumulative instance, the potential for sociocultural impacts would increase yet contains no quantified or detailed information.1708 BLM identifies the following issues that "would increase the potential for sociocultural impacts" in the cumulative case: > changes in income and employment levels > changes in available technologies > disruptions to subsistence activities and uses > and increased interactions with outsiders > abundance of subsistence resources > safety of subsistence hunters1709 Merely listing broad issues that may be "potentially" implicated or "could contribute to changes" does not constitute a hard look. The DEIS does not explain or analyze whether these potential impacts have had negative or positive effects or their expected duration.	Cumulative impacts analysis has been expanded and revised.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
106.	Brook	Brisson	Trustees for Alaska	98270	75	Sociocultural Systems	Similarly, BLM finds that “[p]ast and present actions that have affected sociocultural systems among the Iñupiat and Gwich’in people include: > oil and gas development > onshore and offshore transportation and infrastructure projects > scientific research > increased recreation and tourism > demographic changes > changes in land status > modernization”¹⁷¹⁰ The DEIS does not tie these actions to the cumulative effects analysis - there is no mention of a current project or explanation of how these broad categories impact future activities. The inclusion of this list in the cumulative impacts section implies they are part of the cumulative analysis, but they are not incorporated in any meaningful way. BLM not only needs to provide a baseline for each action listed above, but needs to meaningfully analyze how these actions play a role in the cumulative impacts to sociocultural systems. For example, BLM should clarify what scientific research is used, where increased recreation and tourism are taking place, how much of an increase in recreation and tourism will occur, what types of demographic changes are projected, exactly how land status would change, and what types and how much modernization would occur. In addition, BLM must clarify what onshore and offshore projects they are considering, and include the possibilities of Alpine, Greater Mooses Tooth One, Greater Mooses Tooth Two, Liberty, the proposed Willow project, and the revision of NPR-A Integrated Activity Plan/EIS. BLM must then actually analyze the cumulative impacts of these projects. Broadly suggesting that impacts exist does not constitute the detailed analysis required by NEPA.	Cumulative impacts analysis has been expanded and revised. Projects considered in the cumulative analysis are described in Appendix F.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
107.	Brook	Brisson	Trustees for Alaska	98270	76	Sociocultural Systems	BLM seems to characterize future development on the Coastal Plain as a cumulative impact rather than and direct and indirect impact of its proposed lease sales. BLM simply states "[t]he proposed oil and gas leasing program, in addition to future activities, could lead to additional oil and gas development and other development and infrastructure projects."1711 Besides being illogical, this assumption leads to BLM focusing primarily on direct and indirect impacts to subsistence uses, rather than taking a hard look at the cumulative impacts of other reasonably foreseeable future actions. BLM also does not identify what future activities it is referring to.	Discussion of cumulative impacts has been expanded. In addition, text has been clarified to identify additional development outside the program area
108.	Brook	Brisson	Trustees for Alaska	98270	77	Sociocultural Systems	The DEIS also does not discuss how future development beyond the Coastal Plain would cumulatively impact communities. For example, the cumulative analysis impacts section must address the harm to Gwich'in identity from oil and gas development on the Coastal Plain. The effects of increased development in the region from a variety of resource development and infrastructure projects will by additive and synergistic impacts to subsistence use, the economy, and social cohesion. BLM's failure to adequately analyze cumulative impacts from reasonably foreseeable future projects renders its analysis deficient.	As indicated by table F-1, the past present and reasonably foreseeable future actions considered in the scenario. These include activities beyond the Coastal Plain. Cumulative impacts analysis has been expanded and revised.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
109.	Brook	Brisson	Trustees for Alaska	98270	78	Sociocultural Systems	BLM uses Arctic Village and Venetie as examples of communities that will experience none of the economic benefit from oil and gas, but will see decreased subsistence harvest. 1713 BLM fails to clarify whether the decreases in subsistence harvest stem from reductions to the Porcupine Caribou Herd or other subsistence resources that are likely to be impacted by oil and gas on the Coastal Plain, such as waterfowl and migratory birds. If this reference does pertain to the Porcupine Caribou Herd, the analysis fails to account for all of the communities that will be harmed by impacts to the Porcupine Caribou Herd and a reduction in subsistence resources. BLM fails to account for not only reductions in individuals' ability to obtain caribou, but also reductions and impacts to community sharing practices within and between communities. For the Gwich'in people, "sharing is central to maintaining social and kinship ties." 1714 All Gwich'in communities, Alaskan and Canadian, will experience these impacts and must be accounted for in this analysis. 1713 DEIS vol. 1 at 3-192-3-193.	Text has been added to further address potential impacts to sharing under Disruptions to Subsistence Activities, Transboundary Impacts, and Cumulative Impacts. Subsistence section also addressed resource specific impacts to communities and sharing impacts.
110.	Brook	Brisson	Trustees for Alaska	98270	79	Sociocultural Systems	Further, it is improper for BLM to assume for purposes of its sociocultural impacts analysis that communities who have relied on subsistence practices for countless generations will simply "adapt to such changes, while maintaining cultural traditions and values, such as subsistence, humility, respect for elders, family and kinship, and avoidance of conflict." 1715 BLM cannot shirk its obligations to take a hard look at these impacts by irrationally assuming that entire sociocultural systems will adapt.	Cumulative impacts analysis has been expanded and revised to clarify commenter's concern

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
111.	Brook	Brisson	Trustees for Alaska	98270	80	Sociocultural Systems	The DEIS is flawed by not mentioning climate change in the cumulative impacts analysis, or the entirety of the sociocultural systems analysis. Climate change impacts are currently altering the Arctic at a rapid pace and will continue to shape the future of subsistence hunting and other cultural practices in the Arctic. Through omission, the DEIS ignores the very real impacts which are already happening across the North Slope and Interior Alaska. As discussed elsewhere in these comments, the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals. In other sections of the DEIS, BLM relies on the decision document for the Greater Mooses Tooth Two development to bypass providing any meaningful analysis of the impacts of climate change instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change.1716 The Greater Mooses Tooth Two analysis relates to a landscape hundreds of miles away with different resources and use patterns and does not contain an analysis of the potential impacts of climate change specific to the Coastal Plain and its resources. BLM cannot rely on that analysis to analyze the impacts to sociocultural systems from climate change.	Discussion of climate change has been added to cumulative impacts section.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
112.	Brook	Brisson	Trustees for Alaska	98270	81	Sociocultural Systems	BLM provides no meaningful analysis of all alternatives in the context of cumulative impacts. The alternatives analysis indicates that some impacts will be more severe than others, but the analysis is so vague it is unclear how BLM is actually analyzing impacts and does not account for the complexity of sociocultural issues.1717 The analysis fails to mention Alternative C or D1, only stating that Alternative B and Alternative D2 respectively have the largest and smallest impacts. Merely noting that one option would likely have the most impact and another would have the least is not a meaningful analysis Further, without actual analysis, it is not clear that BLM's conclusion is correct or what it is based on. This renders BLM's cumulative impacts analysis deficient. BLM must compare the alternatives in a robust way, where specific features of the alternatives are considered.	Because of the broad nature of the development scenarios and the lack of detailed oil and gas project descriptions, it is not possible to provide in-depth analyses of differences in impacts on sociocultural systems. Because a primary driver of impacts to sociocultural systems is potential impacts to subsistence resource availability and access, the analysis references the conclusions of the subsistence and wildlife (particularly terrestrial mammal) sections. References were added to those sections and text was added to clarify that types of impacts would be similar across all alternatives, but that the intensity may vary, particularly in regards to impacts to caribou availability.
113.	Kevin	Fisher	North Slope Borough	98272	7	Sociocultural Systems	In general, the descriptions appear to be based primarily on materials that predate 1990, with a few exceptions. They also seem to rely heavily on other environmental documents which appear to suffer from similar problems. A number of key references are not cited, and do not appear to have been consulted. One would expect a thorough literature review, including grey literature, for such a significant and wide-ranging undertaking. This does not appear to be as much of a problem with the Gwich'in.	BLM used the best available information in the analysis. These sources are referenced throughout the analysis. The comment fails to identify key references that are not cited in order to make requested changes.
114.	Kevin	Fisher	North Slope Borough	98272	8	Sociocultural Systems	Pg. 3-179, para. 2-3: The Tagiugmiut vs. Nunamiut distinction, while not completely incorrect, is a somewhat dated way of describing the sociocultural systems of the Iñupiaq communities with ties to the program area. Although the document cites Spencer to this effect, it then goes on to use that lens to describe the settlement pattern.	Text has been edited to reduce focus on Tagiugmiut/Nunamiut distinction and instead focus on coastal Kaktovikmiut settlement patterns.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
115.	Kevin	Fisher	North Slope Borough	98272	9	Sociocultural Systems	Pg. 3-179, para. 3: Since the Iñupiat have previously been described (table 3-25) as spanning the period from 400 years ago to the present, it is hard to understand how Iñupiat/Athabaskan trade at Nuiqsut (presumably at one of the prior locations) and Kaktovik could have maintained connections between the interior and coast for millennia.	Text edits have been made to remove "for millennia."
116.	Kevin	Fisher	North Slope Borough	98272	10	Sociocultural Systems	Pg. 3-179, para. 4: There is no mention of the effects that introduced diseases (e.g. measles) had on populations, which led to need for replacements from inland groups to keep up whaling crew size. There is also no mention of the negative effects of introduced items such as alcohol.	Text has been added to address changes associated with disease and introduction of alcohol
117.	Kevin	Fisher	North Slope Borough	98272	11	Sociocultural Systems	Pg. 3-179, para. 5-6: These two paragraphs both deal with changes in settlement patterns. However, there is no discussion of the post-whaling dispersion for fox trapping and reindeer herding, the collapse of the fur market and consequent moves to more central coastal locations, or the decline of reindeer herding. Although education was compulsory where there was a school, not all families were living in such places, nor were they forced to move (many families appear to have done so because they were told it would benefit their children. Anaktuvuk Pass did not get a trading post or post office until the early 1950s, and the school was first built in 1960.	Text has been added to address settlement patterns following the collapse of whaling

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
118.	Kevin	Fisher	North Slope Borough	98272	12	Sociocultural Systems	Pg. 3-180, para. 1: This appears to imply that Kaktovik was merely a trading center until it was "permanently settled by Euro-Americans" after Tom Gordon established a trading post. This represents a fundamental misunderstanding of the traditional coastal Iñupiat settlement pattern. People generally had a primary winter residence, but also had other locations where they habitually hunted or fished, and where they might have secondary residences. In addition, they might travel to visit relatives and be absent for an extended period. Winter houses were not suited for occupation in the summer, so people often were elsewhere hunting or fishing. There were several well-established settlements on Barter Island well before Tom Gordon established his trading post, as can be seen from archaeological evidence. There appear to have been small settlements along the coast throughout the period, based on reports (none of which are referenced) from several scientific expeditions which worked in the area of cabins belonging to various individuals. The population of Barter Island itself was growing since the 1930s. People were not drawn back to Kaktovik for jobs, since the construction of the DEWLine hangar and runway in 1947 resulted in the bulldozing of almost the entire settlement, and the forced relocation of the entire population.	Literature has been reviewed and text edited to address comment
119.	Kevin	Fisher	North Slope Borough	98272	13	Sociocultural Systems	Pg. 3-180, para. 2: The permanent settlement of Kaktovik did not occur in 1951. See above. This needs to be corrected.	Literature has been reviewed and text edited to address comment
120.	Kevin	Fisher	North Slope Borough	98272	14	Sociocultural Systems	Pg. 3-181, para. 3: Whaling is a year-round endeavor. Crew members (male and female) are involved in activities organized by the captain and/or his wife (depending on the activity) throughout the year. It is not just something more-or-less ad hoc during a whaling season.	Text has been edited to reflect year-round nature of the bowhead whale hunt.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
121.	Kevin	Fisher	North Slope Borough	98272	15	Sociocultural Systems	Pg. 3-183, para. 7: The Iñupiat trade networks had a very extensive reach. They did not only move large quantities of subsistence commodities (pokes of seal oil, caribou hides), but also preciosities (beads, rare raw materials, iron) across the North American Arctic and beyond. Trade clearly crossed the Bering Strait, with items like Chinese horse brasses and Venetian glass beads being found in pre-contact archaeological sites. There could be multiple umialiks in a community. It has always taken considerable wherewithal to outfit a whaling crew, but individuals also had to be trusted by others as leaders, since whaling is a very dangerous enterprise.	Text has been edited to clarify extent of Iñupiat trade.
122.	Kevin	Fisher	North Slope Borough	98272	16	Sociocultural Systems	Pg. 3-184, para. 1: The trading network included trade fairs at Sisualik in Kotzebue Sound and even locations across the Bering Strait. Many of the traders at Barter Island came from the east, and appear to have been trading with peoples even farther to the east. Soapstone lamps clearly came from the east.	Text has been edited to clarify extent of Iñupiat trade.
123.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	26	Sociocultural Systems	BLM failed to explain how the leasing program will impact resources and practices during each month. Subsistence users generally rely on healthy subsistence resources being present in traditional use areas at specific times, and some harvesters are often limited in their ability to access resources beyond traditional use areas at the expected times of year. ³⁸ Even if the potential impact to wildlife resources may be slight, changes in resource access and availability, including perceived changes in fish and wildlife health due to development, may affect subsistence. ³⁸ Point Thompson FEIS vol. 3 at 5-602.	Alternatives do not provide enough detail about project activities to analyze potential impacts on a month-to-month basis. Text has been revised to ensure that in cases where data on the timing of development activities are available, potentially affected subsistence activities are cross-referenced. In addition, the concepts relayed by the commenter regarding small changes having larger effects on subsistence users, have been incorporated into the Draft EIS.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
124.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	20	Sociocultural Systems	BLM relies on outdated and geographically limited subsistence use data in its baseline analysis, calling its findings into question. BLM heavily relies on data from Steven R. Braund and Associates covering 1996-2006, but which only covers Barrow, Nuiqsut, and Kaktovik. This data is 13 years out of date as of the time of the DEIS comment period and does not include any Gwich'in communities. This is unacceptable.	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
125.	Chandra	Turner	Inuvialuit Game Council	75904	25	Sociocultural Systems	Canadian users are not mentioned in Sections 3.4.2: Cultural Resources or 3.4.4: Sociocultural Systems. For Alaskan communities, it is stated that ethnographic cultural resources have "not been documented [...] under the existing regulatory frameworks" (3-156). Despite this assertion, traditional knowledge has been extensively documented in the Inuvialuit Settlement Region, the Gwich'in Settlement Area, and Alaska. Some of this documentation was referred to in our scoping submission (Appendix I). None of this available information was consulted. The list of sources in appendix III is only a small subset of the available documented information on the cultural resources of the affected communities. Much more information on cultural resources in the Inuvialuit Settlement Region is available in the ISR Traditional Knowledge Catalogue: http://isrtlk.com .	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Sociocultural Systems)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
126.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	26	Sociocultural Systems	Fifth, VOICE is concerned by the apparent lack of Traditional Knowledge/Indigenous Knowledge (TK/IK) in the DEIS. In our Scoping Comments, VOICE recommended that the BLM make their best effort to collect and include local and TK/IK into the Draft document. TK/IK refers to the understandings, skills, and philosophies developed by the Iñupiat people through thousands of years of interaction with the natural environment, and is an integral part of our cultural complex. The Final EIS product must strive to integrate western science and TK/IK. Kaktovikmiut hunters spend more time on the land in the Program Area than any agency scientist or biologist, and their observations should be fully incorporated into the Final EIS.	Traditional knowledge, to include oral histories, has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
127.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	51	Sociocultural Systems	Circulation. Ancestral Gwich'in people followed rivers as travel (i.e., circulation) routes that facilitate travel within the Iizhik Gwats'an Gwandaii Goodlit and connect the landscape with the larger region. Some of these travel routes were used for trade. (Figure 3). Figure 3. Dashed lines represent trade route between ancestral Gwich'in people and Iñupiat. ⁴¹	Applicable data have been included in the EIS, as necessary.
128.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	71	Sociocultural Systems	The DEIS significantly underrepresents the traditional and contemporary use areas of the Gwich'in of Arctic Village and Venetie. (DEIS, at Map 3-44). This level of misrepresentation of the Gwich'in demonstrates the BLM's fundamental lack of knowledge about the subsistence, cultural, and historic activities and practices of the Gwich'in. The maps below (Figure 4) represent a more accurate depiction of travel between Arctic Village and Venetie. Figure 4. Lifetime and Ten Year Routes, Venetie Use Areas.	See Response to Letter 81748, Comment Number 71

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
129.	Matthew	Rexford	Native Village of Kaktovik	74308	9	Sociocultural Systems	Pg. 3-173 The DEIS states "According to the Gwich'in people's knowledge, any development in the program area would have devastating effects on the population of the PCH and other resources, such as migratory birds, that have key habitat in the coastal plain." The DEIS should then include a section summarizing the health of the Central Arctic Herd and the which migrate within the bounds of the Prudhoe Bay and Kuparuk Oilfields and calve in the Prudhoe Bay area. The BLM would also be remiss not to include that development within the Mackenzie River Delta and Eagle Plains in Northwestern Canada lies within the range of the PCH, along with the Dempster Highway⁶ . Though we understand that the DEIS focuses on the Program Area, the PCH does not exist "in a vacuum" and the DEIS needs to demonstrate a complete and comprehensive view of the PCH exposure to development and infrastructure throughout its migration. ⁶ Species Management Report: Caribou Management Report. ADF&G, Division of Wildlife Conservation. June 2014.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
130.	Withhied	Withheld	Council of Athabaskan Tribal Governments	95611	2	Sociocultural Systems	The draft EIS relies largely upon Alaska Department of Fish and Game harvest data, numerous studies have found Alaska Department of Fish and Game harvest data based upon reporting, limited and underestimated at best (Anderson, D.B., and C.L. Alexander 1992). For these reasons, the USFWS contracted harvest data surveys and with the Council, recognizing their ability to produce more accurate and useful data. However, it should be noted the draft EIS states that Council data from 2002, 2003, and 2005 has "data Quality issues" and therefore has been removed from the ADFG database (3-165). The reasons cited for the "data Quality issues" are inaccurate and were not been validated with the Council, as common professional peer review protocol would dictate. Caulfield's report and Council data should be referenced in any analysis of impacts to Gwich'in subsistence ways of life. In addition, essential baseline Porcupine Caribou Herd harvest data in 1981-1983, which parallels current use, documented by Caulfield (1983) concludes: Arctic Village residents reported harvesting 300 to 400 animals during this time. Estimates of harvest provided by knowledgeable residents in other communities during this period included: Venetie, 50 to 75; Fort Yukon, 15 to 20; Chalkyitsik, 60 to 70; Eagle 200 to 300; and Kaktovik, 43.	While CATG data are not included in harvest tables due to incompatibility/incomparability with other harvest surveys, the data have been referenced in Draft EIS text where appropriate. In addition, text has been added to provide qualitative references to Caulfield (1983) in places where adequate harvest data are missing.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
131.	David	MacMartin	Gwich'in Tribal Council	75581	7	Sociocultural Systems	the GTC initiated through its Cultural Heritage Department a Phase 1 study of Gwich'in recorded traditional knowledge of Porcupine Caribou. This study is entitled Gwich'in Knowledge of Porcupine caribou and accompanies this submission to the BLM. It will be posted on the draft Leasing EIS website comments section along with this GTC submission. The Phase 1 study consists of a literature search analysis of the existing state of recorded Gwich'in traditional knowledge regarding Porcupine Caribou.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
132.	Withheld	Withheld	Government of the Northwest Territories	92862	76	Sociocultural Systems	The interest in the Porcupine caribou herd in Canada is downplayed throughout the draft EIS. Additional information is available on both harvest and cultural importance of the herd to the Indigenous peoples in Canada. A few missing references included: · Inuvialuit Harvest Study; · Gwich'in Harvest Study; · Gwich'in Words about the Land; · Aklavik Local and Traditional Knowledge about Porcupine Caribou 2009; · Natcher, David, Tobi Maracle, Glenna Titlitchi and Norma Kassi, 2017. Maintaining Indigenous Traditions in Border Regions of Northern Canada. In Robert Bone and Robert Anderson (eds.), Indigenous Peoples and Resource Development in Canada. Ontario: Captus Press: 262-280; There are also many academic references that are not included in the draft EIS. Recommendation The GNWT recommends the BLM s re-evaluate the impacts to the Gwich'in and Inuvialuit in Canada and incorporate the references suggested by the GNWT. The BLM should consider the impacts to Indigenous peoples of Canada and adequately consult based on Section 303(2) of Alaska National Interest Lands Conservation Act (ANILCA).	Section 3.4.3 of the EIS describes subsistence impacts to Indigenous communities that harvest PCH caribou, including those in Canada, and notes that 85% of the PCH harvest occurs in Canada. The EIS has been revised to more fully analyze transboundary impacts, where applicable. DOI has conducted consultation with the IPCB and with Canadian officials.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	4	Sociocultural Systems	There have been many successful EIS's of this magnitude prepared for development projects on the North Slope, namely the 2012 Point Thomson EIS and the 2013 Integrated Activity Plan/Environmental Im-pact Statement created for the NPR-A, both of which are more respectful of our Iñupiat culture and ties to our environment, and present a much more accurate picture of the reality of development in the region. The DEIS would benefit from close review of, and better alignment to, these documents.	Additional information regarding the history of Kaktovik has been included. As noted, previous studies and EIS for North Slope development have extensively characterized the Iñupiat culture and experience. The level of detail is not repeated in the EIS but text has been added to refer the reader to those EISs for additional information on Iñupiat sociocultural and subsistence values. Characterization of the Gwich'in history and culture is less well developed in previous EIS's and studies and requires a relatively greater development. However, the Draft EIS clearly states the differences in potential impacts to Kaktovik and the Gwich'in communities, indicating that Kaktovik will experience the majority of impacts associated with development and the Gwich'in will experience indirect impacts if the PCH experiences changes in migration/distribution or calf and herd survival. Text has been added throughout to emphasize that Kaktovik is the primary user of the area and the most likely to be affected.
134.	Tim	Whitehouse	PEER	95601	79	Sociocultural Systems	What information is currently available to address the information needs for subjects? * Kaktovik's subsistence Use: The most recent and thorough publication regarding Kaktovik's subsistence and traditional land/marine water use patterns were prepared for the US Army Corps of Engineers Point Thomson Project EIS and published in July 2012. Appendix Q of the final EIS and Environmental Impact Statement contains the information on the "Subsistence and Traditional Land Use Patterns for Kaktovik and Nuiqsut" which was prepared by Stephen Braund and Associates at the request of HDR Alaska	BLM has created Appendix Q to acknowledge data gaps.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
134. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	for the US Army Engineer District Alaska Regulatory Division. * The Point Thomson Project is located adjacent to Arctic National Wildlife Refuge on coastal plain approximately 60 miles west of Kaktovik. In describing the affected environment for subsistence, the study team reviewed the Point Thomson Environmental Report (ER) (ExxonMobil 2009), as well as other sources of subsistence data including harvest amount data obtained from the Alaska Department of Fish and Game (ADF&G) Division of Subsistence and North Slope Borough (NSB) Department of Wildlife Management subsistence publications. The ER included harvest data for the majority of available study years. Appendix Q includes additional harvest amount and harvest location data, including unpublished subsistence harvest data from the ADF&G Division of Subsistence and the NSB Department of Wildlife Management acquired in 2002 and unpublished subsistence harvest data acquired from the NSB in 2010. It incorporates additional data from previous Environmental Impact Statement (EIS) efforts, including issues raised during a Point Thomson EIS meeting on caribou in 2002 and subsistence use area data collected in Kaktovik in 2003. Finally, this affected environment incorporates 1995-2006 subsistence use areas collected during a Minerals Management Service (MMS) funded subsistence mapping project in Kaktovik and Nuiqsut (SRB&A 2010a). * There is a significant lack of current and contemporary subsistence and harvest information for the villages of Arctic Village and Venetie. Ethnographic and socio-economic information is not available to assess subsistence uses and impacts to these communities if substantial declines to the Porcupine Caribou Herd occur as a result of oil and gas development and production.	(see above)

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135.	Tim	Whitehouse	PEER	95601	29	Sociocultural Systems	What information is currently available to address the information needs for subjects? Previous cultural resource investigations in the Arctic Plain 1002 area are limited to the coast, some waterways and the northern foothills of the Brooks Range. Key sources include: Grover, Margan A. and Erin Laughlin 2012 Archaeological Survey of the Mid-Beaufort Sea Coast: An Examination of the Impacts of Coastal Changes on Cultural Resources. Hall, Edwin. S., Jr. and David Libbey 1982 Preliminary Archaeological and Historic Resource Reconnaissance of the Coastal Plain Area of the Arctic National Wildlife Refuge, Alaska. Generally, these concentrated on limited aerial and pedestrian reconnaissance surveys of areas modeled to likely have high potential to contain archaeological resources. Collectively, the surveys identified several prehistoric to early historic period seasonal occupation sites consisting of: a. Structures and features such as log cabins, sod houses, graves, ice cellars, and drying racks. Most occur adjacent to Beaufort Sea coast, although a few have been found on river courses several miles inland. b. Tent ring complexes generally located on well-drained river banks, terraces, ridge lines and hill/bluff tops that provide extensive views across the surrounding landscape. c. Lithic artifact scatters, not associated with features or structures, located adjacent to watercourses.	Information from these references has been incorporated from these reports into the EIS

S.3.37 Soil Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	41048	4	Soil Resources	The draft EIS also fails to adequately take into account the impact of climate change and warming temperatures on the Arctic region as a whole and the coastal plain in particular (see 3.2.1). These warming temperatures have made permafrost more vulnerable to damage and have caused more unpredictable weather patterns and thawing cycles.	Climate change is considered in the analysis for individual resources. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
2.	Valerie	Friedman	—	62942	1	Soil Resources	Why is this never addressed when considering impact -- the fragility of the soils/premafrost being crisscrossed with all of the support pipelines, pads and roads that accompany drilling?	The hypothetical development scenario is considered in the analysis for individual resources. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
3.	Ronald	Yarnell	—	67164	10	Soil Resources	What about the piles of mud that are left from this drilling? And what about the compaction where the thumper trucks pack down the tundra.	Drilling muds are no longer placed on the ground. Impacts to soils from seismic operations are addressed in Section 3.2.8 of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	68965	61	Soil Resources	32. Chapter 3; section 3.2.8, pages 3-46 to 3-48. Soils. The section that introduces direct and indirect effects of the program to soils lists the construction of ice roads and pads as an impact mechanism and goes on to describe the general types of effects that emanate from development of these features. This discussion is not included in the "Effects Common to All Action Alternatives" section, suggesting there will be a differential analysis of effects from these features in the description of each alternative. In the comparative analysis of alternatives, however, no quantitative assessment of the differential extent of ice roads and pads under each alternative is offered. It seems reasonable that the extent of ice road and pad features would differ among action alternatives, and because these features are not included in the 2,000-acre disturbance cap, estimates of variation in their extent under each alternative should be used to estimate differences in effects. Please clarify and elaborate the analysis of effects associated with these features.	Additional text has been added to the "Effects Common to All Action Alternatives" section regarding impacts of ice roads and pads.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Withheld	Withheld	—	68965	62	Soil Resources	In general, the analyses of effects to soils for each alternative are qualitative and superficial, appearing not to use estimates and assumptions in the hypothetical development scenario to provide a more refined picture of differences in soil effects among alternatives. The analyses for each alternative also appear to include ice roads and pads in the 2,000-acre facility limit, which is not correct. Considering the profound and lasting effects that the program is likely to have on soils, and the fundamental influence of soils on hydrology, as well as the productivity and diversity of vegetative communities, the effects analysis of this critical resource should be thoroughly revised and elaborated to give the public and decision-makers a more complete picture of how alternatives differ.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.
6.	Withheld	Withheld	—	72125	40	Soil Resources	Soil Resources Comments (Section 3.2): The DEIS lists many of the major effects of an oil and gas program on the Arctic Refuge. The DEIS describes that reclamation that restore landscapes for the purposes of conserving fish and wildlife and protecting water quality takes over 25 years. Therefore it should be noted that, "[f]ollowing a reclamation and restoration period of 25 years or longer, the acreage might be regained against the 2,000-acre surface facility limit." Seismic surveys over a 900 square mile area would materially interfere with providing for the Arctic Refuge purposes of (1) conserving fish and wildlife populations and habitats in their natural diversity and (2) ensuring to the maximum extent practicable and in a manner consistent with the purposes of conserving fish and wildlife populations and habitats, water quality and necessary water quantity within the refuge.	Section 1.9.1 describes those facilities that will be counted against the 2,000-acre limit. BLM will use facility data in the form of ArcGIS-compatible shapefiles obtained under ROP 33 to track facility acreage to assure continued compliance with the Tax Act limit. ROP 35 requires the development of a BLM-approved abandonment and reclamation plan. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts to resources such as permafrost, vegetation, and water.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Katherine	Trisolini	Loyola Law School	74278	12	Soil Resources	The DEIS Should Provide More Thorough Analysis of Permafrost Melt, Particularly Regarding Mercury Release Because the entire region in which the lease occur sits on permafrost, it is essential that the EIS fully address the implications of scientific research showing that melting permafrost can be anticipated to release substantial amounts of mercury into the environment. The EIS mentions in passing (a single sentences sprinkled into a few places in the EIS) that melting permafrost can release not only carbon dioxide and methane but also persistent organic pollutants and mercury. (See, e.g., single sentence stating only "Lastly, the degradation of permafrost and multi-year sea ice could release persistent organic contaminants and mercury to aquatic ecosystems and wetlands (Schiedek et al. 2007)"). Yet mercury release from melting permafrost stands to be a highly significant impact in the region that the project will cumulatively exacerbate.	Additional text has been added associated with sequestered mercury and impacts of released sequestered mercury discussed in Section 3.3.1 - vegetation and wetlands
8.	Janet	Jorgenson	—	81671	4	Soil Resources	For soils, information listed under Alternative D doesn't tell whether impacts would be more or less than under Alternatives B or C. For the example below, are sand and silt more easily damaged than sands and gravels?: "Alternative D. Potential impacts on soils and permafrost under Alternative D would be the same as identified above for all action alternatives; however, lease stipulations would limit surface occupancy to the western third of the program area, which is primarily composed of fine sand and silt deposits with restricted use of areas next to alluvial plains, which are composed of sands and gravels" (p 348).	Additional information and discussion have been added of variations in soils and ice content resulting in variable thaw strain of soils and relation to the action alternatives and surface occupancy potential.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Joseph	Galloway	—	93706	1	Soil Resources	SUMMARY: A mitigation bank should be established and the drilling lessee should acquire and contribute an amount of land similar in character to the leased land, and equal in acreage to the whole disturbed area (not just the area of infrastructure footprint). BACKGROUND: Permafrost areas can be considered wetlands, triggering the necessity for a Section 404 permit. See Tin Cup, LLC v. U.S. Army Corps of Engineers, Case No. 17-35889 (9th Cir. Sept. 21, 2018). The amount of land contributed to the mitigation bank should be considerably more than just the infrastructure footprint, since nesting and migration will be disturbed for a distance beyond the infrastructure. (New roads, pipelines, landing strips, etc. should be considered part of the infrastructure.) The size of this disturbed area is what should be contributed to the mitigation bank. The banked land should be similar in ecological function to the disturbed area, and should be land that is not previously owned by the United States (otherwise it would be the United States and not the lessee that will be doing the mitigation!).	Mitigation banks are most commonly utilized to offset impacts on waters of the U.S., under Section 404 of the Clean Water Act which have regulations for requiring compensatory mitigation and development of mitigation banks (33 CFR Part 320, and Part 332, respectively). The BLM does not have comparable regulations, and if compensatory mitigation is determined a necessary component of future activities, it would be determined during site-specific future NEPA analysis, for the site-specific impacts.
10.	—	—	Alaska Department of Natural Resources	94102	60	Soil Resources	35 Chapter 3, Page 3-46 Revise analysis -Soil Resources Settlement and ponding only occurs if soils are thaw unstable. If they are not, such as frozen sand and gravel tend to be, then thawing of permafrost will not cause subsidence or water accumulation. As much of the Coastal Plain is underlain by granular materials that will be thaw stable, this an over simplification. The next section on sand and gravel resources outlines how abundant these generally thaw-stable soils are in the northern and western portion of the area. Placement of fill does tend to cause permafrost degradation under thin fills and embankment slopes, but permafrost can aggrade into thick embankments.	Discussion has been expanded to discuss thaw strain variations of soil types (granular v. silt) and impacts of development in these different soil types.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Kenyon	Meyer	—	94105	15	Soil Resources	The DEIS points out, "Permafrost is not likely to disappear in the program area during the life of any oil and gas development in the program area; however, if temperatures continue to warm in the area, the warm season active zone (thawed soil zone) would go deeper, making equipment movement more difficult in warm months, possibly increasing road maintenance frequency and costs."69 While permafrost may not entirely disappear, it's thawing alone will create an additional environmental consequence that the BLM has not considered in calculating their alternatives. The DEIS must meaningfully evaluate and propose active mitigation for the environmental impact of thawing permafrost accelerated by activities associated with oil and gas drilling in the Arctic.	Thawing of permafrost associated with changes in climate are discussed in Section 3.2.1, Climate and Meteorology. The objective of ROP 11 was developed to mitigate against impacts to soils and permafrost. If the resources are experiencing impacts to the point where the objectives can no longer be met, then the BLM can proactively initiate the waiver, exception, or modification process to modify the ROP. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
12.	Mark	Jorgenson	—	94411	32	Soil Resources	Furthermore, the DEIS lacks discussion of permafrost thermal regimes and effects of a warming climate (Osterkamp and Jorgenson 2006).	Additional maps and discussion with respect to permafrost type included
13.	Mark	Jorgenson	—	94411	36	Soil Resources	Current development in the NPRA has been limited to coastal plain deposits, so there is little experience with development on yedoma. There have been many exploratory wells drilling in the lower foothills on yedoma and in those localities deep thermokarst appears to be developing at some sites. The extremely high ice contents of this terrain make this terrain of special concern and its distribution and characteristics need to be better evaluated in the region.	Added discussion of yedoma (definition and increased thaw strain risk when thawed).
14.	Mark	Jorgenson	—	94411	39	Soil Resources	To avoid and minimize permafrost degradation, and the resulting irreversible changes in hydrology, vegetation, and trail visibility, better knowledge of permafrost distribution is needed so that sensitive terrains can be avoided, particularly for camp moves.	Additional text has been added to discuss thaw strain differences of silt and sand - reference to Pullman report.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Mark	Jorgenson	—	94411	40	Soil Resources	For ice-rich terrains, snow depth requirements should be increased to an average minimum of 12", and snow depth distribution needs to be better mapped and analyzed, to minimize moderate and high-level disturbances, which can lead to increased thaw depths and thaw settlement, and permanent track depression.	The objective of ROP 11 was developed to mitigate against impacts to soils and permafrost. If the resources are experiencing impacts to the point where the objectives can no longer be met, then the BLM can proactively initiate the waiver, exception, or modification process to modify the ROP. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
16.	Mark	Jorgenson	—	94411	49	Soil Resources	The DEIS needs to address the effects of permafrost degradation on gravel fill that may be left in place. Gravel fill is still used for pads and roads in production phase and also causes thermokarst around the edges.	Addressed on page 3-47 - <i>impacts common to all action alternatives</i>
17.	Mark	Jorgenson	—	94411	50	Soil Resources	Because little is known about the ecological fate at sites where gravel has been removed, there should be a comprehensive study of long-term ecological and permafrost changes at gravel removal sites.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such gravel mines, except to prohibit them in specified areas of particularly high value surface resources under some alternatives.
18.	Mark	Jorgenson	—	94411	51	Soil Resources	Thermokarst after gravel removal has large implications for oil development in the 1002 Area. The DEIS states that gravel fill will be removed after abandonment but does not address the issue of what effects thermokarst after gravel removal will have on long-term visual impairment from the scars, the stability of extremely ice-rich permafrost (yedoma), and on slope hydrology in areas with hilly topography.	Additional text has been added to discuss thaw strain differences of silt and sand - reference to Pullman report.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Withheld	Withheld	—	94632	1	Soil Resources	The draft EIS fails to adequately take into account the impacts of permafrost degradation resulting from development. Impacts should be anticipated to be similar to the substantial impacts of oil and gas development in the nearby Prudhoe Bay Oilfields (PBO). These impacts are well studied and are documented in peer reviewed literature such as this 2013 paper in the journal Global Change Biology by an interdisciplinary team of scientists (Raynolds et. al. 2013) based on multiple data sources extending from prior to the start of development in the PBO in 1968 to 2011, which can be found from the link in the references. And the more detailed report "Landscape and Permafrost Changes in the Prudhoe Bay Oilfield, Alaska" (Walker et. al. 2014) which can also be found from the link in the references. The disturbance to the solar heat balance of the soil from developments such as roads and gravel drilling pads can result in spreading thermokarst development which can potentially alter landforms and vegetation over a much larger area than is covered by the original commonly considered development area. Impacts of permafrost degradation which should be considered include but are not limited to: changes to wildlife habitat, socioeconomic impacts and the additional carbon footprint of the carbon dioxide and methane release resulting from the degradation of the organics which are no longer frozen in the permafrost.	Additional text has been added to discuss albedo changes due to constructed pads and roads and impacts to permafrost thaw at those locations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Harry K.	Brower Jr.	North Slope Borough	95612	32	Soil Resources	it is difficult to determine whether the rate of coastal erosion is increasing in the short-term and should therefore be a consideration with respect to areas offered for leasing and the location of oil and gas infrastructure. Accordingly, for the lease of any lands in coastal areas, we request that BLM consider the site-specific rates of erosion and require that any lessee locate infrastructure outside the maximum distance of erosion that is projected to occur during the life of any proposed development.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
21.	Kaarle	Strailey	—	95670	2	Soil Resources	Impoundments and alterations to surface water movement atop permafrost caused by roads and pads have widespread and unpredictable implications for the micro and meso habitats of the coastal plain and long term implications for accelerating thaw of underlying permafrost. The effects upon permafrost and localized melting that will then spread resulting from compaction of soils during exploration and development activities are not addressed in a meaningful way.	This level of specificity related to surface water movement would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
22.	Kaarle	Strailey	—	95670	3	Soil Resources	What has been done recently or will be required of lease purchasers to assess baseline permafrost conditions and hydrology, and the effects upon soil, surface water movement, and permafrost stability of compaction and impediments to water flow caused by gravel pads, roads, etc?	The objective of ROP 11 was developed to mitigate against impacts to soils and permafrost. If the resources are experiencing impacts to the point where the objectives can no longer be met, then the BLM can proactively initiate the waiver, exception, or modification process to modify the ROP. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Kevin	Kane	Sierra Club, Western Watersheds	96216	5	Soil Resources	Baseline data needs to be collected for soil density (compaction), monitoring needs to be established to measure soil compaction. Are you saying that only winter time disturbance will take place?	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
24.	Brook	Brisson	Trustees for Alaska	96981	86	Soil Resources	BLM's discussion of the impacts to soils and permafrost is so truncated and sparse that it deprives the public of the ability to understand the wide range of impacts likely to occur to these resources from oil-and gas-related activities on the Coastal Plain. It also provides no indication that BLM took a hard look at the potential direct, indirect, and cumulative impacts of the oil and gas program, as required by NEPA. For example, BLM fails to adequately quantify the total number of acres that could be impacted due to the placement of gravel fills and VSMs for roads, pads, airstrips, and structures. BLM estimates that, under all the action alternatives, there will be approximately 2,000 acres of disturbance from gravel fill. 755 BLM's analysis does not quantify the potential indirect impacts to soils and permafrost, which could extend well beyond the actual footprint of the gravel and could persist for decades. 756 Oil development impacts are not limited to the area where drill pad gravel or support beams touch the ground. Gravel roads cause permanent hydrological and surface morphological changes to the landscape, altering permafrost freeze-and-thaw cycles and creating issues related to thermokarst. These effects can include deeper permafrost thaw, earlier snowmelt in close proximity to the road, and alterations to hydrology. 757 Gravel roads and related traffic on	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit. Addressed on Page 3-47 - <i>impacts common to all action alternatives</i> . Impacts to soils are addressed in Section 3.2.8 of the EIS. Fill acreages under the various action alternatives are describe in Appendix B.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	roads can also lead to issues with dust, salts, and contaminants being deposited into streams and ponds or onto nearby tundra, where it can smother or alter the mix of vegetation. The road dust can smother vegetation, reducing transpiration, and decreasing albedo, leading to a warming effect that can increase the depth of thaw in the summer. 758 This can lead to changes in geomorphology, where ice wedges melt around flat or high-centered polygons and can become degraded polygons.	(see above)
25.	Brook	Brisson	Trustees for Alaska	96981	87	Soil Resources	BLM also fails to consider the potential impacts that could occur from infrastructure, such as pipelines, that may not directly touch the ground, but could still shade areas and potentially lead to changes in vegetation and permafrost. There could also be warming that occurs around the base of the vertical support members (VSMs), which can threaten the integrity of infrastructure over time (e.g. sags in pipelines, which can lead to spills).	Oil and gas infrastructure, to include pipelines and VSMs is considered in the hypothetical development scenario used in the EIS. Impacts of infrastructure on vegetation and soils is addressed in Sections 3.2.8 and 3.3.1 of the EIS. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Brook	Brisson	Trustees for Alaska	96981	91	Soil Resources	Second, BLM generalized its analysis in a way that assumes all permafrost and soil conditions across the entire North Slope are homogenous, and failed to look at the conditions and concerns specific to the Coastal Plain. The terrain, permafrost, hydrology, and snow conditions on the Coastal Plain differ greatly from those found further to the west in areas like the NPRA and the Nanushuk project. The Coastal Plain is primarily dominated by foothills (45%), hilly coastal plain (22%), and river floodplains and deltas (25%), with a small portion that is part of the Sadlerochit Mountains (0.03%).⁷⁶⁷ Flat thaw-lake plains, which are typical in the northern portion of the NPRA and Prudhoe Bay area, make up only 3% of the Arctic Refuge's Coastal Plain.⁷⁶⁸ These differences lead to there being broad floodplains and deltas in some areas and deep ravines and gullies in other areas of the Coastal Plain, which in turn has the potential to impact snow distribution, hydrology, permafrost, and vegetation in the region⁷⁶⁹ - all in ways that are different from what occurs further to the west in areas like the NPRA. The Coastal Plain also has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.⁷⁷⁰ This in turn could lead to very different impacts from those that have occurred further to the west, where there is comparatively greater snow cover to mitigate against impacts from activities like seismic exploration.	The conditions within the program area are not homogenous; however, availability of small scale mapping and data is limited for the program area. Additional language to incorporate permafrost type mapping by Jorgenson added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Brook	Brisson	Trustees for Alaska	96981	94	Soil Resources	BLM's analysis also fails to account for the unique permafrost conditions on the Coastal Plain and how impacts might substantially differ from those in areas to the west. For example, extremely ice-rich silt deposits called yedoma are abundant in a broad band across the western half of the Coastal Plain. ⁷⁷³ These deposits can be more than 40 meters thick and, if they were to thaw completely, could result in thaw settlement at levels of 10-20 meters of more. ⁷⁷⁴ The impacts of exploration and development on yedoma and other ice-rich soil features on the Coastal Plain, could lead to thermokarst formation and thermal erosion, followed by subsidence, ponding, and new surface drainage patterns that threaten extensive ecosystem changes and dangers to infrastructure, and could be difficult or impossible to mitigate. ⁷⁷⁵	Added discussion of yedoma, specifically a definition and information regarding a definition and increased thaw strain risk when thawed.
28.	Brook	Brisson	Trustees for Alaska	96981	96	Soil Resources	BLM's failure to adequately address past, present, and future seismic exploration leaves its analysis of the potential impacts to soil resources and permafrost fatally deficient. It is particularly important that BLM address the undulating terrain of the Coastal Plain. Slope transitions are one of the places where seismic equipment is likely to cause damage to the vegetation and permafrost. BLM needs to account for these terrain and other differences in analyzing the potential impacts.	White paper reviewed. Additional discussion added to impacts common to all action alternatives. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts to resources such as permafrost, vegetation, and water. Impacts to soils from seismic operations are addressed in Section 3.2.8 of the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Brook	Brisson	Trustees for Alaska	96981	98	Soil Resources	These seismic operations, particularly when considered cumulatively, have the potential to significantly degrade permafrost, destroy vegetation, and dramatically alter hydrologic systems. BLM's analysis in no way accounts for these combined impacts.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts to resources such as permafrost, vegetation, and water. Impacts to soils and vegetation from seismic operations are addressed in Sections 3.2.8 and 3.3.1 of the EIS. Seismic testing is addressed under cumulative impacts of Section 3.2.8

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Brook	Brisson	Trustees for Alaska	96981	100	Soil Resources	BLM's discussion of the different impacts that are likely to occur under each alternative provides no meaningful analysis of the differences between the various alternatives. The EIS notes that the potential impacts under each of the alternatives would be the same as its general description of potential impacts (which, as noted above, also does not contain an adequate analysis of the potential impacts). ⁷⁸³ The only differences the alternatives analysis notes are that there are slightly different levels of disturbance from gravel fill and gravel mines, and that lease stipulations would limit surface occupancy to the western area of the Coastal Plain under Alternatives C and D. ⁷⁸⁴ This is not an adequate analysis. This in no way accounts for the differences in permafrost and soil resources across the Coastal Plain and how impacts across the Coastal Plain might have different impacts than might occur under a scenario that limits development activity to certain areas in the Refuge. It also does not acknowledge or account for the fact that BLM has the ability to waive any limitations on surface occupancy, which could further compound impacts. BLM needs to substantially revise this section to fully describe and account for the potential differences in impacts for each of the alternatives.	Additional discussion and analysis have been added. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The fact that impacts to a specific resource are similar across all action alternatives does not, per se, indicate that the range of alternatives is not reasonable under NEPA or that the impact analysis is lacking.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Brook	Brisson	Trustees for Alaska	96981	101	Soil Resources	BLM only touches on a handful of points in its cumulative effects (indicating a cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or section for soils and permafrost: that previous seismic surveys caused long-term damage to soils and permafrost and future surveys may have similar impacts; that there may be greater than 2,000 acres of impacts to soils and permafrost if acreage is regained from reclamation;786 that there could be changes to soil composition, drainage patterns, erosion, and thermal regimes; and that climate change could influence the rate or degree of cumulative impacts.787 While BLM recognizes these impact categories, it does nothing to quantify or otherwise analyze them and disclose to the public and decision makers how they are likely to affect the Coastal Plain.	Additional language added to page 3-49 to further discuss cumulative impacts with respect to climate change and areal development with respect to the rolling 2,000-acre limit.
32.	Brook	Brisson	Trustees for Alaska	96981	102	Soil Resources	The agency also does not discuss how past, present, or future actions could combine to exacerbate and magnify impacts. This is not an adequate analysis of the potential cumulative effects. It does not discuss in any meaningful way what those impacts might be, the scale on which they would occur, the timeframe in which they would occur, how those effects might combine or overlap, or anything else.	Additional language added to further discuss cumulative impacts with respect to climate change and areal development with respect to the 2,000-acre limit. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts to resources such as permafrost, vegetation, and water.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Brook	Brisson	Trustees for Alaska	96981	103	Soil Resources	It also fails to discuss the full range of activities that could cumulatively combine to cause these impacts. The draft EIS mentions seismic surveys and the 2,000 acres directly occupied by surface facilities, but does not account for other impacts, such as those from exploratory drilling and ice roads, other off-road travel that could occur in the program area, or gravel mines.	Additional language added to further discuss cumulative impacts with respect to climate change and areal development with respect to the rolling 2,000-acre limit. Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations, which would analyze potential impacts to resources such as permafrost, vegetation, and water.
34.	Brook	Brisson	Trustees for Alaska	96981	104	Soil Resources	The discussion also does not account for cumulative impacts to soils and vegetation that could occur from contamination issues as well - a serious omission given the long history of oil spills from North Slope oil drilling and transportation operations.	Addressed in Section 3.2.11
35.	Brook	Brisson	Trustees for Alaska	96981	106	Soil Resources	BLM limits its analysis of cumulative impacts to the program area, contrary to NEPA. BLM is required to consider all past, present, and reasonably foreseeable future actions. ⁷⁹⁰ That analysis is not limited to the limited geographic area in the program area and should consider broader impacts and degradation of permafrost and soil resources across the North Slope and northwest Canada.	The cumulative effects analysis for soils is properly limited to the program area. See Section F.4.8 of Appendix F.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	—	—	United States Fish and Wildlife Service	97942	209	Soil Resources	Thawing permafrost may also mobilize previously-sequestered contaminants, including mercury (Schuster et al. 2018, Ryder et al. 2010). Additionally, wetlands created through thawing of permafrost add to the mercury methylation potential of watersheds. Throughout the DEIS, many post-leasing activities are described as having the potential to thaw permafrost without mentioning these significant related potential effects. Please correct as appropriate throughout the document.	Additional text has been added associated with sequestered mercury and impacts of released sequestered mercury discussed in Section 3.3.1 - vegetation and wetlands
37.	—	—	United States Fish and Wildlife Service	97942	233	Soil Resources	The DEIS does not mention the importance of intact soil and sediment microbial communities, which form the base of the food chain. As an example, during cleanup of oil spills (especially to land) natural remediation of unrecovered petroleum products is dependent upon soil microbes. We recommend that the DEIS evaluate practices that affect soil microbes, including compaction, gravel and sand extraction, and any intentional (chlorinated domestic water) or unintentional (hazardous material) spills that affects the soil microbial biome and could diminish recovery processes.	Soil microbiome activity would increase under a warming arctic which would provide additional natural remediation to oil spills if they were to occur. The issue related to soil microbiome disturbance would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure.
38.	—	—	United States Fish and Wildlife Service	97942	234	Soil Resources	Recommend including "Massive Ice" map from Jorgenson et al. (2015).	Map and discussion added to Affected environment of soil resources section (3.2.8)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Katherine	Trisolini	Loyola Law School	98002	10	Soil Resources	Because the entire region in which the lease occurs sits on permafrost, it is essential that the EIS fully address the implications of scientific research showing that melting permafrost can be anticipated to release substantial amounts of mercury into the environment. The EIS mentions in passing (a single sentence sprinkled into a few places in the EIS) that melting permafrost can release not only carbon dioxide and methane but also persistent organic pollutants and mercury. (See, e.g., single sentence stating only "Lastly the degradation of permafrost and multi-year sea ice could release persistent organic contaminants and mercury to aquatic ecosystems and wetlands (Schiedek et al. 2007)"). Yet mercury release from melting permafrost stands to be a highly significant impact in the region that the project will cumulatively exacerbate.	Additional text has been added associated with sequestered mercury and impacts of released sequestered mercury discussed in Section 3.3.1 - vegetation and wetlands
40.	Katherine	Trisolini	Loyola Law School	98002	11	Soil Resources	Recent research shows Arctic permafrost contains much higher levels of mercury than previously understood, and indeed the active layer of arctic permafrost contains the largest reservoir of mercury on the planet, and that "the active layer and permafrost together contain nearly twice as much Hg as all other soils, the ocean and atmosphere combined." [Schuster, et al. (2018) Permafrost stores a globally significant amount of mercury, Geophysical Research Letters 45, 1463-71. https://doi.org/10.1002/2017GL075571 . Moreover, rapid permafrost thaw can enhance methylmercury production, resulting in bioaccumulation and harm to humans and wildlife. [Yang, et al., Warming increases methylmercury production in Arctic Soil, Environmental Pollution 214 (2016) 504-509, https://www.osti.gov/pages/servlets/purl/1319169 .]	Additional text has been added associated with sequestered mercury and impacts of released sequestered mercury discussed in Section 3.3.1, Vegetation and Wetlands

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Withheld	Withheld	—	96867	5	Soil Resources	3-48 "Each of the hypothetical development scenarios could affect over 2,000 acres of soils and permafrost, as acreage would be regained against the 2,000-acre surface facility limit during reclamation (Appendix B).	Additional language added to Section 3.2.9 to further discuss cumulative impacts with respect to climate change and areal development e with respect to the 2,000-acre limit.

S.3.38 Solid and Hazardous Waste

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Douglas	Früge	—	30574	5	Solid and Hazardous Waste	Impacts would result from the generation of various types of solid waste associated with human/industrial activities on the Coastal Plain, wastewater, produced fluids, drilling muds, and spills of oil, salt water, and hazardous substances. All of these impacts would require some type of disposal or remediation, both of which are very problematic in a remote Arctic environment.	The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2.
2.	Withheld	Withheld	—	55209	6	Solid and Hazardous Waste	The risks of oil spills are dramatically understated in the draft EIS! Oil fields on the North Slope have averaged more than 400 oil spills per year, and across Alaska, there were 16 major spills from 2002 to 2016 that released at least 10,000 gallons of oil into the environment. Five of those spills released more than 100,000 gallons of oil.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.
3.	Charlotte	Basham	—	58396	6	Solid and Hazardous Waste	The DEIS understates the risk of oil spills on the coastal plain. The document acknowledges that there have been 3 documented spills greater than 100,000 gallons (Vol 1 p 132.). Actually, the Center for American Progress states that there has been an average of 400 oil spills per year, at least 5 of which were greater than 100,000 gallons. This risk should be honestly presented, not understated.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	62727	1	Solid and Hazardous Waste	There is no recognized clean up procedure or equipment available to deal with the inevitable spills	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.
5.	Jenny	Rowland-Shea	Center for American Progress	67555	1	Solid and Hazardous Waste	the DEIS expects that development would result in up to 1,745 oil spills, including six large spills. Although these are striking numbers, the assessment downplays the risk, stating that the probability of a spill of more than 100,000 gallons is “low” because there were “only” three spills of that magnitude documented from 1985 to 2010. If one examines oil spill data from across Alaska, however, the prospect of a major spill in the Arctic Refuge seems almost certain. From 1995 to 2005, North Slope oil fields averaged more than 400 oil spills per year. Across Alaska, there were 16 major spills from 2002 to 2016 that released at least 10,000 gallons of oil each into the environment; five of those released more than 100,000 gallons each. Most recently, in April 2017, a BP well in nearby Prudhoe Bay gushed oil and gas for three days before an emergency response team managed to kill the well.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.
6.	Withheld	Withheld	—	69211	7	Solid and Hazardous Waste	What are the mechanisms to minimize the effects of an oil spill that is almost certainly expected to occur during the project history in the future? What fines will be levied? How will the fines and damages be quantified?	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Becky	Long	—	69710	17	Solid and Hazardous Waste	The oil spill risk is underestimated. DEIS states that based on historic North Slope Oil and Gas spill data, this leasing program could result in up to 1745 oil spill including 6 large ones. To say that the risk of a spill greater than 100,000 gallons is low is illogical. The reason given is that there were only 3 documented spills that large between 1985 and 2010. Because of the US Energy Dominance policy of the current federal and state administrations, there will be a steep increase in the amount of fossil fuel leases on all public lands on the North Slope. The DEIS statistics are off. The North /Slope oil fields from 1995-2005 had more than 400 oil spills per year. Across Alaska from 2002 to 2016, there were 16 major spills of more than 10,000 gallons. Five of those spills were over 100,000 gallons.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.
8.	Withheld	Withheld	—	70934	23	Solid and Hazardous Waste	Page 3-65 “cumulative impacts”, Does this indicate that we should expect at least 16,000 gallons of spills in the assumed 50 year life of the project? If the life of the field is longer than 50 years what are the projections? How can BLM credibly assert that 16,000 gallons in spills over a 2000-acre footprint will have no cumulative impact? Isn't that 8 gallons per acre?	Text has been added to Section 3.2.11 to say that the 16,000+ spilled to date has occurred near developed areas of Kaktovik. Based on ADEC data of North Slope spills from 1995 to 2018 approximately 85 percent of spills were small or very small.
9.	Jill	Nogi	Environmental Protection Agency	71634	35	Solid and Hazardous Waste	Section 3.4.11 Solid and Hazardous Waste includes discussion of the likelihood and consequences of spills of substances including produced fluids, oils, salt water, or other hazardous materials. We recommend that the EIS also discuss spill response measures that will be in place to mitigate the risks of spills, including strategies to communicate risks or actual emergencies to members of the public who are in the area, as well as how potential adverse impacts from spills will be mitigated by effective containment and cleanup operations.	The BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
10.	Withheld	Withheld	—	73209	2	Solid and Hazardous Waste	What will happen when melting permafrost under connector pipelines between the Coastal Plain and TAPS buckles and breaks, increasing the number and severity of spills? What will happen when TAPS itself disintegrates under the forces of melting permafrost at various locations along its entire 880-mile length and all oil from the North Slope ceases to flow? These are vital questions to be answered long before another major new area is opened to oil and gas development.	North Slope pipelines are designed and maintained to Arctic specifications, including accounting for permafrost conditions. Most North Slope pipelines are elevated on vertical support members and do not contact the ground. Evaluating impacts to TAPS is outside the scope of this Leasing EIS. When a specific project is proposed, it will be required to evaluate connecting pipelines to TAPS and if TAPS has capacity to carry the proposed production rate.
11.	Withheld	Withheld	—	73288	1	Solid and Hazardous Waste	* page 3-65: detected spills are promptly contained and cleaned up to federal, state, and borough regulations. Alternative A would have no cumulative impacts on solid and hazardous waste from post-leasing oil and gas Comment: Analysis of Very Large leaks should be performed. As an example, the Taylor Energy well has been leaking into the Gulf of Mexico since 2004, and the Interior Department has been unable to require the owner to stop the leakage. This well has leaked 1.5-3.5 million barrels into the Gulf and continues to leak at a rate of 300-700 barrels per day (according to and analysis performed for the Justice Department). Taylor Energy claims the platform failure was an "act of God", and that the Government has not proved the leakage comes from their well. Since enforcement of mitigation measures for Very Large leaks is not assured, the EIS should present an analysis of the probability and consequences of such a leak.	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Richard	Edwards	—	74281	38	Solid and Hazardous Waste	The Draft EIS fails to adequately characterize the risk of oil spills by limiting its risk analysis to include only spill records for Alaska's North Slope. Based on this area-restricted, historical record, the Draft EIS concludes that the risk of a very large spill of more than 100,000 gallons is estimated to be low (page 3-62) to very low (Table 3-15, page 3-64). However, considering oil spill data from across Alaska, the likelihood of a major spill on the Coastal Plains seems almost inevitable. Statewide from 2002-2016, there were 16 major spills that released at least 10,000 gallons of oil each into the environment. Five of those spills were classified as very large, exceeding 100,000 gallons each (Summary of West Coast Data CY 2016, Pacific states/British Columbia Oil Spill Task Force, May 2017). In April 2017, a BP well near Prudhoe Bay vented gas and oil spray for three days before an ADEC/EPA response team managed to kill the well. The Draft EIS states that North Slope production activity has resulted in only three documented spills greater than 100,000 gallons (page 3-62). The Draft continues stating that: "Upon detection, spills have been contained and cleaned up, as required by federal, state, and NSB regulations (NRC 2003)." The Draft fails to correlate these events to Table 3-14 Spill Characteristics by Season---have past major spill events occurred only under weather/site conditions that best promote cleanup and restoration? In addition, the DEIS also fails to mention or discuss the potential for and impacts of an oil spill from a vessel carrying product from Coastal Plain fields.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Richard	Edwards	—	74281	39	Solid and Hazardous Waste	The Draft EIS must be revised to include a description and quantitative analysis of several Hypothetical Major Oil Spill Scenarios, as follows: a) A very large spill on land during the season with the best site/weather conditions for clean-up and removal b) A very large oil spill on land during the season with the worst site/weather conditions for clean-up and removal c) A very large oil spill, near-shore involving a vessel carrying crude product from Coastal Plain fields during the best marine conditions for clean-up and removal d) A very large oil spill, near-shore involving a vessel carrying crude product from Coastal Plain fields during the worst marine conditions for clean-up and removal	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.
14.	Lisa	Baraff	Northern Alaska Environmental Center	74306	21	Solid and Hazardous Waste	The risks of oil spills are dramatically understated in the DEIS. The DEIS minimizes the potential for a spill by stating that "The probability of a spill over 100,000 gallons is low," because on the North Slope, "only three documented spills have been greater than 100,000 gallons" (Vol. 1, p. 132). According to the Center for American Progress, oil fields on the North Slope have averaged more than 400 oil spills per year and, across Alaska, there were 16 major spills from 2002 to 2016 that released at least 10,000 gallons of oil into the environment. Five of those spills released more than 100,000 gallons of oil.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Lisa	Baraff	Northern Alaska Environmental Center	74306	22	Solid and Hazardous Waste	There have been several blowouts (uncontrolled releases from wells) on the North Slope in recent years. BP Exploration Alaska (BPXA) experienced two blowouts from existing production wells in April 2017 and December 2018, and Repsol had a blowout in February 2012 from an exploration well. All of these blowouts released oil and posed worker safety hazards. Table 3-15 shows the risk of blowouts with oil spills of any size to be Very Low. Given these three recent onshore incidents on the North Slope, the risk of a blowout with full-scale development on the Coastal Plain does not appear to be Very Low as stated in the DEIS. BLM should work with the Alaska Oil and Gas Conservation Commission (AOGCC) and reassess this risk and revise the EIS accordingly.	Additional text has been added to Section 3.2.11. The Alpine Final EIS (2004) describes the probability of a well blowout as rare, or one event per 1,000 wells between 1971 and 2001. DEC data from 1995 to 2018 has been reviewed and the conclusions made in the EIS are still valid.
16.	Lisa	Baraff	Northern Alaska Environmental Center	74306	23	Solid and Hazardous Waste	In an order (Other Order 149, Feb 28, 2019) recently released on the BPXA blowouts, AOGCC baldly states that, "BPXA also has no evidence that permafrost subsidence will not result in sudden catastrophic failure. Given the lack of evidence, BPXA's current well integrity management methods may not be sufficient to identify 2-casing-string wells that develop subsidence risk." Further, "If the tubing or annuli are in communication with the Prudhoe Bay reservoir, the result could be an uncontrolled release of produced fluids at the surface." This draft must analyze the potential effects of permafrost thawing, and the contingencies for uncontrolled spills. The blowouts at the BP wells were determined to be related to permafrost thaw, an issue that will undoubtedly magnify with the warming trends and melting permafrost associated with climate change.	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. During that time the North Slope has been experiencing permafrost thawing. The EIS discusses the trend of permafrost thawing (e.g., Section 3.2.8) and its effects on oil and gas infrastructure including wells (e.g., Section 3.2.5).

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Renae	Smith	Counsel for Environmental Protection	74336	44	Solid and Hazardous Waste	Despite studies showing the long-term nature of impacts from even small spills, the DEIS does not acknowledge the long-term impacts of oil spills, provide any scientific support for its analysis, or otherwise analyze how any oil spill would impact bird populations. The DEIS also ignores the Fish and Wildlife Service's 2015 observation that an offshore oil spill "could have direct effects by oiling birds aggregated in coastal areas and ----- ----- 226 DEIS 3-95-98. 227 DEIS at 3-99. 228 Id. (stating that "many species would be vulnerable" if oil is not contained and flows into lagoons); id. ("Large spills ... could pose contamination risk to large numbers of molting, feeding, or migrating birds."). 229 Henkel, et al., Large-Scale Impacts of the Deepwater Horizon Oil Spill: Can Local Disturbance Affect Distant Ecosystems through Migratory Shorebirds?, BioScience, Vol. 62, Issue 7 (July 2012), at 676-85 (concluding that impacts from the Deepwater Horizon spill will likely extend to other ecosystems, including the Arctic, used by migratory birds and other highly mobile species), https://doi.org/10.1525/bio.2012.62.7.10; Esler, et al., Cytochrome P4501a Biomarker Indication of Oil Exposure In Harlequin Ducks up to 20 Years after the Exxon Valdez Oil Spill, Env'tl. Toxicology and Chemistry, Vol. 29, No. 5, pages 1138-1145, 1144 (2010) (find strong evidence of oil exposure in harlequin ducks 20 years after Exxon Valdez oil spill), https://doi.org/10.1002/etc.129. 230 Maggini et al., Light oiling of feathers increases flight energy expenditure in a migratory shorebird, Journal of Experimental Biology, at 2200, 2372-79 (2017), http://jeb.biologists.org/content/jebio/220/13/2372.full.pdf. -----	This issue is discussed in Section 3.3.3 Birds - Mortality and Injury discussion.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	indirect effects by impacting the food resources used by birds."231 In short, the DEIS's analysis is wholly inadequate.	(see above)
18.	Withheld	Withheld	—	72942	1	Solid and Hazardous Waste	Drilling in nearby Prudhoe Bay caused flooding and pollution far beyond the border of the oilfields, which ruined more ecosystems than originally estimated by any environmental review. You can see the study on nearby Prudhoe Bay here: "Cumulative geoeological effects of 62 years of infrastructure and climate change in ice-rich permafrost landscapes, Prudhoe Bay Oilfield, Alaska" https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.12500	Text has been added to Section 3.2.11 based on a review of ADEC data of North Slope spills between 1995 to 2018. See Section 3.2.10 Water Resources for discussion on flooding.
19.	Withheld	Withheld	—	80930	6	Solid and Hazardous Waste	The risks of oil spills are dramatically understated in the DEIS. The document minimizes the potential for a spill by stating that "The probability of a spill over 100,000 gallons is low," because on the North Slope, "only three documented spills have been greater than 100,000 gallons." (Volume 1, p. 132) However, according to the Center for American Progress, oil fields on the North Slope have averaged more than 400 oil spills per year, and across Alaska, there were 16 major spills from 2002 to 2016 that released at least 10,000 gallons of oil into the environment. Five of those spills released more than 100,000 gallons of oil. In any case, 100,000 gallons is an arbitrary parameter, ignoring the significant environmental damage that can be caused by smaller oil spills.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.
20.	Natalie	Dawson	—	81061	4	Solid and Hazardous Waste	Identification of resources at risk and modeling potential spills and response. Identify shoreline segments for Shoreline Classification and Assessment Techniques (a spill response technique used with assessing the degree of oiling); spill response plan (Audubon investing heavily because of PWS Exxon background?); suitability for adequate response varying from nearshore to onshore;	At the time of a site-specific proposal, the operator will be required to model potential spills, submit a spill response plan, and classify shorelines near site-specific project.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	Withheld	Withheld	World Wildlife Fund	81184	17	Solid and Hazardous Waste	Additionally, as the draft EIS acknowledges, toxic chemicals and other hazardous materials are used in oil and gas operations and have been known to kill polar bears through accidental ingestion. (See, e.g., DEIS, vol. 1, at 3-64 and 3-141) In fact, on the North Slope of Alaska, substantial quantities of acidic, explosive, poisonous, flammable, and corrosive materials are transported into the area each year, including several substances designated "extremely hazardous," such as sulfuric acid, hydrochloric acid, hydrogen peroxide, and chlorine (See U.S. Coast Guard, et al, Arctic & Western Alaska Area Contingency Plan, at 282-83 (version 1.0, Aug. 2018), available at http://dec.alaska.gov/media/10703/arctic-western-plan.pdf). The same types of chemicals can be expected to be used at new oil and gas facilities on the Coastal Plain. Marine transportation is likely to be used for Coastal Plain operations given the lack of a road between Kaktovik and Deadhorse. The spill analysis must therefore be expanded to encompass toxic chemical spills into the marine environment from shipping activities both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.	As discussed in the Reasonably Foreseeable Development Scenario (Appendix B), barge activity is assumed for providing supplies and modules. Barging is not discussed as a shipping method for crude oil. See Section 3.3.5 Marine Mammals for discussion of impacts to marine mammals along the marine barge route. See Table 3-14 in Section 3.2.11 for description of spill characteristics in the Beaufort Sea by season.
22.	Megan	Williams	o.b.o. Trustees for Alaska	81368	84	Solid and Hazardous Waste	A near-field modeling analysis of localized maximum ambient hazardous air pollutant (HAP) impacts from the direct and indirect emissions from all phases of an oil and gas program on the Coastal Plain should be performed to assess whether the activities allowed under the considered alternatives will cause adverse health impacts.	Near-field modeling analysis of localized maximum ambient hazardous air pollutant (HAP) impacts from the direct and indirect emissions from all phases of an oil and gas program would be outside the scope of the analysis for this EIS, but may be conducted at a site-specific level following the leasing phase

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
23.	Paige	Smith	—	83305	1	Solid and Hazardous Waste	The likely occurrence of spills as shown in Table 3-15 constitutes an overly optimistic expectation that results in the effects to the environment also being unrealistically minimized. The State of Alaska's Department of Environmental Conservation contaminated site database and contaminated site map for the coastal areas including Kaktovik and Camden Bay describe spills of petroleum products which have taken several years to several decades to be satisfactorily remediated to state acceptable cleanup levels. Some of these sites have not yet been satisfactorily cleaned up. These real-world examples of contaminated sites and the associated difficulty in addressing the contamination should have been taken into consideration in this DEIS that is proposing unprecedented lease sales in an area of national and global environmental significance.	Text has been added to Section 3.2.11 based on a review of ADEC data of North Slope spills between 1995 to 2018. At the time of a site-specific proposal, the operator will be required to submit a spill response plan and identify resources to be used.
24.	Withheld	Withheld	—	84900	1	Solid and Hazardous Waste	. Further, there is no recognition in the DEIS of the impossibility of cleaning up any sort of spill or trash that is an inevitable result of human industrial activity in this type of fragile ecosystem. The DEIS fails to meet or fulfill NEPA requirements, so the BLM cannot authorize leasing	At the time of a site-specific proposal, the operator will be required to submit a spill response plan and comply with ROP 1 and 2.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Greta	Burkart	—	96243	25	Solid and Hazardous Waste	The section on hazardous spills really downplays spills as if just because a 10,000- gallon spill does not occur every day, they are nothing to worry about. There HAVE been North Slope oil spills that are greater than 10,000 gallons and they HAVE occurred with the new advanced technology. They may not happen every day, but they do happen. The Arctic Refuge 1002 Area is a sensitive environment that supports millions of migratory birds, endangered polar bears, important cultural activities, and subsistence resources. There is no guarantee that these resources and activities will not be seriously impacted in the long-term because 10,000-gallon spills are not occurring on a daily basis. Oil spills are not easy to clean up and some spills are much more difficult to clean up than others. There is no guarantee that there will be money to clean up spills. The water resources section indicates that spills in near-shore marine areas will only be local and short-term. Unless the spill is on soil and you can extract and remove it all from the Refuge, spills are not easy to clean up and are not short-term. The Exxon Valdez was a spill that had a low probability of occurring, yet it's severe long-term impacts on fish, wildlife, and humans is still evident today. The potential severity and any probability of occurrence is great enough that we need far better information on sensitive areas and species and a far better idea of the extent of impacts than what we have now. I have spent the day walking on a beautiful glacier-fed river delta that feeds into a lagoon protected by the barrier islands of the 1002 Area -I was surrounded by thousands of birds and saw at least a dozen polar bears. These bears swim across the lagoon regularly. A s pill in an area like this would be tragic. The 1002 Area of the Arctic Refuge's 1002 Area is full of amazing	Text has been added to Section 3.2.11 based on a review of ADEC data of North Slope spills between 1995 to 2018. At the time of a site-specific proposal, the operator will be required to submit a spill response plan and identify resources to be used. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	and fragile habitats like this. It is hard to define areas like these without studies and there has not been time or money to do a systematic assessment of sensitive or unique habitats in the Arctic Refuge's 1002 Area	(see above)
26.	Tom	Lakosh	—	98149	2	Solid and Hazardous Waste	It fails to consider the use of best and safest technology for oil spill recovery equipment, to recover ice, to recover oil and broken ice, either on rivers or on the coastal plain. It fails to use the state of the art equipment that is available for oil recovery in ice in the Baltic and Norway. It is therefore deficient in the analysis and of the ability to meet the federal leasing standards as requiring best and safest technology, not only on the lease site, but in transit to the lease site, including the oil transit away from the lease site into Prince William Sound at the Valdez Marine Terminal, which has an inability to prevent an air-fuel explosion at the terminal in the event of a catastrophic response plan a standard size spill which may total, as an air-fuel explosion, of up to five kilotons of TNT explosive force equivalent, due to the evaporation of light ends, which are likely to be more prevalent from the oil fields in ANWR as they is the case in Point Thompson. I request that the EIS scope be expanded to include the evaluation of those technologies and exactly what would be necessary to meet Open 90 requirements, which would otherwise be applicable were it not for the Coast Guard exemption in Alaskan waters.	This EIS will not result in the authorization of any on-the-ground activities. . Any on-the-ground activities will require additional NEPA analysis. At the time of a site-specific proposal, the operator will be required to submit a spill response plan and discuss spill recovery equipment/methods.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Tom	Lakosh	—	98149	3	Solid and Hazardous Waste	It is also a question of false statements and false documents being present in a federal investigation where the ability to meet the estimated daily recovery capacity for the state equivalent thereof for oil spill response equipment, where that have been proven to be overstated by a factor of 300 or more. In the McCondo (ph) oil Spill, better known as Deep Water Horizon, where there was quite a bit more infrastructure available and a professed ability to to recover 500,000 barrels of oil in the region in the Mississippi trench area. And an additional 1.2 million or an additional .7 million barrels of capacity were called into recover the McCondo spill, but in fact even under that extreme ability to bring in additional resources, the average recovery rate was 18 hundred barrels per day as opposed to the half million barrels per day professed as immediately available, and the 1.2 million barrels of oil per day recovered capacity that was eventually brought into the region. It is therefore a fraudulent misrepresentation in a federal investigation to profess the ability to recover that amount of oil in response to blowouts or a pipeline spill along the coastal plain. Please revise the DEIS to account for these additional impacts to the environment that will necessarily incur damage to the protected and endangered species on the North Slope including speckled eiders and polar bears and ring seals as well. Please make sure that the oil spill response equipment capacity is evaluated in a realistic manner and not in the fraudulent manner that has been the case to date.	At the time of a site-specific proposal, the operator will be required to submit a spill response plan and discuss spill recovery equipment/methods.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Dr. Julianne Lutz	Warren	—	74344	10	Solid and Hazardous Waste	15)Oil spills-what would happen in this expensive to reach place when a spill would occur?	BLM requirements should not duplicate State of Alaska requirements, especially when ADEC requirements are more detailed and in some cases more stringent than federal requirements. At the time of a site-specific proposal, the operator will be required to submit a spill response plan.
29.	Jessica	Wentz	Sabin Center for Climate Change Law	75152	18	Solid and Hazardous Waste	BLM should particularly address the risks posed by infrastructure that could result in environmental degradation, such as oil spills. In the EIS, BLM acknowledges that thawing permafrost can negatively affect oil and gas infrastructure by causing subsidence. It discusses how “warm production and injection wells can cause thawed areas around the well” and that such warming led to a 2017 oil spill in the NPR-A when a well suffered a cracked casing due to subsidence from thawing. ⁴⁰ BLM proposes this type of failure can be minimized through “modern well construction methods, including installing thermosyphons around wells to remove heat transfer from wellbore fluids.” ⁴¹ Elsewhere in the report, BLM also acknowledges that thawing of permafrost is a climate effect. ⁴² However, BLM should conduct a more in-depth evaluation of projected permafrost thawing in the project area, best practices to reduce the risk of subsidence damaging infrastructure and resulting in oil spills, and associated costs of mitigation activities. BLM should also acknowledge the unique risks posed by oil spills in the Arctic and conduct an analysis of potential response measures and environmental impacts. One key lesson from the Deepwater Horizon spill was the importance of advance planning on how to respond to an incident if it occurs, both to reduce the risk of a major incident and to ensure that the agency accounts for potential environmental impacts of response measures (e.g., the	The impacts of permafrost thawing on North Slope oil and gas wells and other infrastructure is well understood. The Alaska Oil and Gas Conservation Commission requires North Slope wells to be designed to account for unstable permafrost conditions. The EIS identifies potential spill impacts associated with oil and gas activities in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	effect of dispersants used in the Gulf after the Deepwater Horizon spill). For the purposes of the ANWR Coastal Plain oil and gas leasing proposal, BLM's analysis of oil spills and response measures should account for the fact that the remote location and hazardous conditions in the arctic (e.g., hurricane-force storms, 20- foot swells, pervasive sea ice, and frigid temperatures) can complicate the response process, for example by making it difficult to get oil spill cleanup equipment to spill sites. BLM should also discuss the possibility that an oil spill in the Arctic may be impossible to clean up depending on the location and conditions. In this discussion, BLM should address limitations in oil spill response capacity - for example, the U.S. Coast Guard stated in 2017 that it is not ready to clean up oil spills in the Arctic ⁴³ - BLM must grapple with this in its analysis. Finally, BLM should discuss how the cleanup process can itself be environmentally disruptive.	(see above)
30.	Susan	Lubetkin	—	75234	1	Solid and Hazardous Waste	This paragraph is apparently a reference to Table I-4 on page I-3 in Appendix I of the Coastal Plain DEIS Volume 2. The title of that table is "ADEC 1995-2018 Database Spill Records for Areas near Kaktovic, Alaska." The total number of spills and spill volume (in gallons) in that table are 34 and 16,313 (not counting one spill listed in pounds), respectively. There is no definition of what "areas near Kaktovic" are, so it is hard to judge if this is a meaningful spill count.	Section 3.2.11 has been updated to clarify that spills are located in developed areas near Kaktovic (typically within 3 miles).

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Susan	Lubetkin	—	75234	2	Solid and Hazardous Waste	In some DEISs spill classes are defined in gallons, such as BLM 2004 Volume 1. In others (BLM 2004 Volume 2, Appendix 9; BLM 2012 Volumes 4 and 6) they are defined in barrels, where one barrel contains 42 gallons (Table 1). Risk rates are not comparable unless the definitions match for both quantity and unit. For the Coastal Plain DEIS the spill size class definitions on p. 3-31 in BLM (2018b) are in gallons, not barrels: * Very small spills, less than 10 gallons * Small spills, 10 to 99.5 gallons * Medium spills, 100 to 999.5 gallons * Large spills, 1,000 to 100,000 gallons * Very large spills, greater than 100,000 gallons This means that risk rates cited for different spill classes in different DEISs will have to be recalculated for spills falling in the same category names, as a <1000 gallon spill does not have the same risk rate as a <1000 barrel spill, even though both might defined as large in their respective DEIS spill size categorizations. BLM did not show quantitative risks under any spill size definition, leaving readers without the information needed to evaluate the risks and impacts.	Use of barrels and gallons has been standardized in the EIS. Barrels is used when discussing oil, with the equivalent amount of gallons in parenthesis.
32.	Susan	Lubetkin	—	75234	3	Solid and Hazardous Waste	the frequency of the spills in different size classes varies dramatically, so even if the impacts of a single small or medium spill may not appear to be significant alone, it is worthwhile to consider how many such spills might occur and their aggregated and cumulative effects over time and space.	The EIS estimates the number of potential spills of different sizes, and addresses the impacts of individual spills and their cumulative effects.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33.	Susan	Lubetkin	—	75234	7	Solid and Hazardous Waste	Given the range of production possibilities, any calculations of project specific spill risks and cumulative effects of spill risks should state clearly what value is deemed most likely, and, more importantly, an upper bound, so that a worst case scenario (in environmental and ecological terms) can be considered as the regulatory agencies weight the risks and rewards of approving this project. Since there is a range of production potential, BLM should conduct an analysis of that full range and present that.	NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.
34.	Susan	Lubetkin	—	75234	9	Solid and Hazardous Waste	There is nothing statistically important about a ten-year data window. Instead, the larger the sample (in this case the time frame), the better the statistical analysis will be. Therefore, the analysis should be expanded to include spills and annual production/transportation volumes prior to 1995 and after 2005. This is especially true for estimating the rates of occurrence of relatively rare events, such as spills >1000 barrels (>42,000 gallons). By definition, rare events don't happen very often, which means a long sampling period is necessary to accurately assess their frequency. Thus, a ten-year time frame may be inadequate to measure the frequency of crude oil spills larger than 1000 barrels. In other words, the estimated spill risk rate of 0 spills of >1000 barrels (>42,000 gallons) of crude oil per BBO produced shown in Table 9 is an artifact of an insufficiently large data set being used to address the question and not an accurate risk rate estimate. (See also Section 7 for reasons to look at long term spill histories.)	. The BLM 2004 data was reviewed and current DEC data from 1995 to 2015. Based on this review the conclusions from the Alpine EIS were still valid.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Susan	Lubetkin	—	75234	10	Solid and Hazardous Waste	the assertions given by BLM in the Coastal Plain DEIS that the risk of a large spill is low to very low are unfounded. Even using a relatively small estimate of BBO produced, such as the Van Wagener 2018 estimate, approximately 10-14 large spills of crude oil are expected, depending on the spill rate per BBO used. Furthermore, more than 3300 spills of all types and sizes could be expected, including 110-127 large spills (shaded entries in Table 10). If more than 3.4 BBO are produced, the expected numbers of spills would increase proportionally.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded. Between 1995 and 2018 there has been an average of 14 large spills annually.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	Susan	Lubetkin	—	75234	11	Solid and Hazardous Waste	1. Explicitly define spill size classes and note when and how they differ from spill size class definitions in other documents. Make sure that all rates are converted to the same units. 2. Use up-to-date spill records and long-term data sets to estimate spill risk rates. Be explicit about how those data are specified. Use an oil produced/transported volume from the same time period. Given that the oil production estimate and risk rates are likely to be ranges, the estimated numbers of spills that would occur will also be ranges, and should be presented as such, with mean values and worst (environmental) cases explicitly called out. 3. Consider that spill count might be best modeled by a Poisson variable, but spill volume for individual spills and as a total over time might best be modeled by some other distribution (log normal, (negative) exponential, etc.). Those are separate questions and should be handled as such. 4. If the spill count data follows a Poisson distribution (following assessment using goodness-of-fit), a much more sophisticated analysis of the Poisson parameter can be done using generalized linear models, which allow ? (or ?, depending on the notation being used) to be modeled based on a linear combination of independent variables. See Julian J. Faraway's Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models (Chapman and Hall, published in 2006), Chapter 3.	Units have been updated throughout section.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Susan	Lubetkin	—	75234	12	Solid and Hazardous Waste	It is tempting to believe that there are trends with time that may show a decrease in spill frequency or spill volume, but showing either of those is not statistically straightforward. If the spill frequencies follow a Poisson distribution, it would be likely that many years would have relatively few spills, but that the long-term history would show a handful of years with what look like anomalously high spill counts. If the window of statistical modeling catches one of those spill count spikes at the end (in the most recent data), it could lead to the conclusion that spill rates were increasing. Conversely, if the spill count spike occurred early in the time frame, it might be easy to erroneously conclude that spill rate is decreasing. Considering a longer time frame and multiple other factors that could affect spill frequency will allow for a more robust statistical assessment of any trends over time. Unless BLM can justify why using only smaller data set is statistically preferable, it should use all available data to evaluate the spill risk and impacts.	The EIS utilizes the best available data, which comes from regulatory requirements to self-report spills.
38.	Susan	Lubetkin	—	75234	13	Solid and Hazardous Waste	It also calls into question why the only table about oil spill risk in BLM's Coastal Plain DEIS is a reproduction of the qualitative table from 2004 (Table 4.3.2-2 from BLM 2004 Vol. 1, p. 381). The ADEC database has up to date spill data available and there are also readily available estimates of the amount of oil produced on the North Slope of Alaska.	The document tiers from the 2004 EIS and references the updated data from the ADEC database in Appendix I. Based on ADEC records the information in the referenced table still appropriately describes the relative rate of occurrence for spills.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Susan	Lubetkin	—	75234	14	Solid and Hazardous Waste	Section 4.5.2 Spills history (starting on page 473 of Volume 1) notes that there have been different definitions of spill size categories in different EISs prepared by the BLM. Specifically, it is shown that the terms small, large and very large have very different volume ranges between reports, making comparisons challenging for the reader. (See Table 1 in Section 2 of this comment.) Furthermore, while "[l]arge spills were determined to have low probability" (Vol. 1, p. 473), no spill probability or rate was given, nor was the volume range that qualified as large specified.	Spill size and probability are included in the EIS. See Table 3-15 Relative Rate of Occurrence for Spills from Main Sources.
40.	Susan	Lubetkin	—	75234	15	Solid and Hazardous Waste	In Section 4.5.2.2 it states that the ADEC database "lists 252 spills reported within the Alpine Oil Field for the entire operating period, from 1998 through March 2017" with a total volume of 15,975 gallons spilled (Vol. 1, p. 475). There were 27 spills that were larger than 55 gallons spills that occurred between 1999 and 2015 listed in Appendix C of Appendix P (Table C-1: Alpine history of spills greater than 55 gallons, pages C-1 to C-7). I have not checked if the spills from Table C-1 are a subset of the 252 spills. Of those 27 spills listed by ConocoPhillips, 18 were between 100 and 999 gallons (medium spills according to the BLM 2004 and 2018 definition) and two were larger than 1000 gallons (large spills according to the BLM 2004 and 2018 definition). All the spills listed were less than 500 barrels and would have been considered small under the BLM 2012 definition.	This Draft EIS uses the same spill size classification as the BLM 2004. Units will be changed to barrels and gallons in parenthesis for this section.
41.	Cherissa	Dukelow	—	75244	3	Solid and Hazardous Waste	The required operating procedures specify that waste associated with oil activities should be disposed of by injection. How does waste injection impact this sensitive landscape seismically and hydrologically? How will injection not result in gross contamination in the future with shifting lands and melting permafrost?	Injection wells are regulated by federal and state agencies. When a specific project is proposed, it will be required to comply with federal and state regulations, and additional NEP analysis will be required.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	13	Solid and Hazardous Waste	- Contamination by oil spills (which is cynically, but truthfully already taken for granted as a certain „percentage spill per drilled barrel oil“) would be devastating for the land, the animals and, because of the connected ecosystem, the area as a whole, with few to no instruments proved in arctic conditions to clean it up quick enough to not destroy the ecosystem forever. The optimistic view of the DEIS when dealing with oil spills shows a blatant neglect of oil spills in the past like the leak in the Trans-Alaska Pipeline System where 267,000 gallons of crude oil were spilled undetected for several days (Barringer, F., Large oil spill in Alaska went undetected for days. The New York Times, March 15, 2006). Each year 880,000 gallons of oil are left in ocean waters by US drilling operations alone. There is no reason to trust the claimed reliability of the safety of infrastructure and monitoring systems.	Proposed projects would be required to meet current safety and monitoring standards, and comply with federal and state regulations.
43.	Withheld	Withheld	—	81065	1	Solid and Hazardous Waste	The means described in the draft EIS to mitigate the production of hazardous waste from an oil or gas extraction project is not sufficient to the fact that the subterranean geology and aquifers are not well understood. The process of injecting waste into a well as mentioned in the Solid and Hazardous Waste section in chapter three as a means of mitigating the hazardous waste produced by an oil or gas extraction project cannot be used as a reasonable means for hazardous waste removal at this time. There is no publicly available data of the subterranean geology or hydrology at this time of the EIS draft review, therefore the described hazardous waste mitigation process of well injection is not viable. The lack of knowledge in the subterranean geology and hydrology of the North Slope of the Arctic Refuge could lead to possible project impacts not described in this draft EIS.	This EIS uses the best available information to make an informed decision. Proposed projects would be required to perform additional, site-specific NEPA analysis and describe impacts to geology and hydrology.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	Todd	Campbell	Conservation Biology course	81185	1	Solid and Hazardous Waste	The environmental impact addressed the possibility of an oil spill, as it is always a risk throughout oil exploration, but did not propose a recovery plan or even a mitigation plan in the case of an oil spill. How the oil company chooses to respond to a spill could greatly affect wetland vegetation. For example, in some areas, where freshwater habitat is limited during the winter seasons, fish have 5% of the habitat they have in the summer. These temporal limitations make some fish species extremely vulnerable to extinction. Any destruction to their habitat could cause a decline in their population, which would cost money to recover. Prevention, in this case, is the best method. Additionally, all flowing waters in the program area drain to the Beaufort Sea. In the case of an oil spill that infiltrated the flowing water system, it would rapidly pollute the entire system if the spill happened during the summer when water is flowing. An oil spill would directly impact the fish that live in the waters, the surrounding vegetation that uptake the water, and the terrestrial animals that drink it. The many animals of the ANWR region would suffer from an oil spill either from direct contact, ingestion, or habitat/ food source destruction.	When a specific project is proposed, it will be required to comply with federal and state regulations, including development of spill response plans.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Joseph	McCarthy	—	82657	3	Solid and Hazardous Waste	In another instance, the report (3-62) cites BLM (2004), "The combination of more stringent agency regulations ... [reduces] the probability and size of future spills." Current trends to remove "regulatory burdens" are not "more stringent". Relying on a 15-year-old report that was written in a different regulatory environment instills little confidence in this report. The current Department of the Interior hails a reduction in regulatory burden. The current BLM and Fish and Wildlife Services operate under this deregulating strategy. It is inconsistent to cite a 15-year-old report written under a more "stringent" or protective strategy to support that oil spills will not be as likely or large today. This inconsistency indicates that the oil spill analysis may be incorrect. An alternative must not be selected until risks to ground water and soils are properly assessed.	Removed the phrase more stringent and replaced with "federal and state " in Section 3.2.11.
46.	Julia	Wagner	—	83570	6	Solid and Hazardous Waste	Contamination by oil spills (which is cynically, but truthfully already taken for granted as a certain „percentage spill per drilled barrel oil") would be devastating for the land, the animals and, because of the connected ecosystem, the area as a whole, with few to no instruments proved in arctic conditions to clean it up quick enough to not destroy the ecosystem forever. The optimistic view of the DEIS when dealing with oil spills shows a blatant neglect of oil spills in the past like the leak in the Trans-Alaska Pipeline System where 267,000 gallons of crude oil were spilled undetected for several days (Barringer, F., Large oil spill in Alaska went undetected for days. The New York Times, March 15, 2006). Each year 880,000 gallons of oil are left in ocean waters by US drilling operations alone. There is no reason to trust the claimed reliability of the safety of infrastructure and monitoring systems.	Proposed projects would be required to meet current safety and monitoring standards, and comply with federal and state regulations.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Withheld	Withheld	WWF-Canada	85059	26	Solid and Hazardous Waste	Oil & Hazardous Substance Spills: Shipping-related oil and hazardous substance spills and resulting impacts are not discussed in any substantive way in the draft EIS. The apparent rationale for the general exclusion of shipping-related spills from the draft EIS analysis is buried in the marine mammal section. The narrative strongly downplays the potential likelihood, extent, and harm of any oil or hazardous substance spill. by suggesting that (1) there is a "low risk" of spilled fuel if a vessel carrying fuel were to run aground during barging, (2) a large oil spill in the Arctic marine environment is unlikely because "[t]o date," such as a spill has "not occurred," (3) spill risks will be reduced through "safeguards" specified in the required oil spill prevention and contingency plans, (4) the quantities of oil or hazardous substances likely to be released would be "relatively small," and (5) potential spills during refueling at sea would be only "small, accidental" spills.	As discussed in the Reasonably Foreseeable Development Scenario (Appendix B), barge activity is assumed for providing supplies and modules. Barging is not discussed as a shipping method for crude oil.
48.	Withheld	Withheld	WWF-Canada	85059	28	Solid and Hazardous Waste	Furthermore, since the practice of bulk fuel barging to the Arctic is relatively new to this region, the lack of historic spills is not a viable metric or indicator of future risk, and the existence of oil spill prevention and contingency planning requirements does not eliminate the risk of a spill and does not excuse BLM from its duty to analyze and explain such risks in an EIS	As discussed in the Reasonably Foreseeable Development Scenario (Appendix B), barge activity is assumed for providing supplies and modules. Barging is not discussed as a shipping method for crude oil.
49.	Withheld	Withheld	WWF-Canada	85059	29	Solid and Hazardous Waste	The spill analysis must therefore be expanded to encompass toxic chemical spills into the marine environment from shipping activities both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.	See Section 3.3.5 Marine Mammals for discussion of impacts to marine mammals along the marine barge route.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Withheld	Withheld	WWF-Canada	85059	30	Solid and Hazardous Waste	Finally, the draft EIS must consider the marine impacts of potential oil spills on keystone Arctic species, such as the Arctic cod. Arctic cod are an energy-rich Arctic keystone forage fish that serve as primary prey species for marine mammals, seabirds, and fish. A recent study by scientists at Oregon State University and NOAA found that exposure of Arctic cod eggs to low dosages of Alaskan North Slope crude oil resulted in sublethal cardiac abnormalities and deficits in energetics that lasted into the juvenile stage. The scientists found that developing Arctic cod exposed to oil as embryos entered the overwintering period with less energy reserves, contributing to high mortality rates during a period critical to their survival. Reduced survival and fat content are irreversible impacts that make Arctic cod, and in turn, the maritime Arctic ecosystem that depends on them, highly vulnerable to an oil spill. The draft EIS's spill analysis must also therefore be expanded to encompass the impacts of oil spills on the survival of keystone species at critical life stages and the marine ecosystems whose life they support.	See Section 3.3.5 Marine Mammals for discussion of impacts to marine mammals along the marine barge route.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Ruth	Wood	—	92475	14	Solid and Hazardous Waste	The Draft EIS asserts that the probability of a large spill (over 100,000 gallons) is low because there have been only 3 spills greater than 100,000 gallons on the North Slope. I contend that the past number of spills has no direct correlation with the potential for future spills. I further contend that if BLM does want to use historical spills to predict future spills, they should include spills of all sizes and predict the damage that smaller oil spills can do to the critically sensitive Coastal Plain. A spill of 10,000 gallons can be devastating. How many spills of 10,000 gallons or more have occurred on the North Slope? How many of 5,000 gallons or more? What damage was done and how was it repaired? The Draft EIS should include all this information, and discuss how spills will be handled to prevent loss of critical habitat and death of animals.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.
52.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	13	Solid and Hazardous Waste	The BLM claims the risk of large oil spills would be low, but references spill history near Kaktovik, AK (an area with no history of major oil and gas developments: see table I-4) rather than the areas of the Alaska North Slope where oil and gas activities actually occurs. The DEIS should base its oil spill projections off of the history of spills around Prudhoe Bay and other comparable sites.	See Section 3.2.11 and Appendix I Table I-5. Will add in language that the data is from developed areas near Kaktovik and is not included in the Coastal Plain project.
53.	Andrew	Odgen	—	94112	3	Solid and Hazardous Waste	The DEIS minimizes the potential for a spill by stating that "The probability of a spill over 100,000 gallons is low," because on the North Slope, "only three documented spills have been greater than 100,000 gallons." (Volume 1, p. 132) According to Center for 5 American Progress, oil fields on the North Slope have averaged more than 400 oil spills per year, and across Alaska, there were 16 major spills from 2002 to 2016 that released at least 10,000 gallons of oil into the environment. Five of those spills released more than 100,000 gallons.	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Tim	Whitehouse	PEER	95601	27	Solid and Hazardous Waste	What are key information gaps? ? Lack of contemporary contaminant concentrations in almost all sensitive resources that would serve as baseline data for NEPA, oil spill planning, and NRDAR. ? Complete project description, including timetable. ? Description of potential hazards to humans (including subsistence users) and the environment. These should be addressed in the NEPA process for all phases, but will need to be reviewed by the U.S. Fish and Wildlife Service. ? Disposal methods for all waste, including sewage, produced water and drilling muds. These should be addressed in the NEPA process for all phases, but will need to be reviewed by the U.S. Fish and Wildlife Service. ? Monitoring plans, including pre-operation baseline, for contaminants of concern and sensitive resources. These should be addressed in the NEPA process for all phases, but will need to be reviewed by the U.S. Fish and Wildlife Service. ? Full disclosure, characterization, and tracking of hazardous materials, including potential proprietary mixtures, which may be disposed of in the 1002 area, including by injection, to protect groundwater and springs. This may not be entirely addressed during the NEPA process, especially if proprietary information is involved.	This EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1), Section 20001(a)(2) the Tax Act assigns BLM the sole responsibility for making oil and gas program decisions.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Tim	Whitehouse	PEER	95601	28	Solid and Hazardous Waste	What studies/surveys need to be conducted to fill those information gaps? ? The U.S. Fish and Wildlife Service does not currently have sufficient FTEs with environmental contaminants knowledge and skills to conduct or review studies, or evaluate NEPA documents, for oil and gas exploration or drilling in the 1002 area. ? Develop statistically sound contaminant monitoring program with enough power to detect biologically significant changes in contaminants concentrations, and changes in contaminants concentrations that may exceed regulatory thresholds. Include: ? Evaluate sampling locations and matrices from previous contaminants baseline study for sufficiency as monitoring sites and matrices, and evaluate current data for suitability as baseline data. ? Add site-specific monitoring sites and matrices depending upon project description to provide baseline (pre-project) data. ? For groundwater monitoring, include location, depth, and monitoring interval of groundwater wells that would identify changes from baseline specifically for springs. ? Hydrological evaluation of underground aquifers and surface waters, including springs, in the 1002 area to avoid and minimize contaminant migration potential. ? Updated baseline sampling in fish, especially those used for subsistence, of contaminants associated with oil and gas development including heavy metals, persistent organics, NORMs, and hydrocarbons. ? Updated baseline contaminant exposure information for birds breeding in the 1002 area, and those using deltas and lagoons for fall staging, with particular emphasis on hydrocarbon and heavy metal exposure, and how contaminant burdens may affect subsistence value. ? Continued collection of polar bear contaminants exposure data, with an emphasis on hydrocarbon and heavy metal exposure.	This EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1), Section 20001(a)(2) the Tax Act assigns BLM the sole responsibility for making oil and gas program decisions.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Tim	Whitehouse	PEER	95601	32	Solid and Hazardous Waste	Concerns associated with oil (and other hazardous materials) spills in the event of oil and gas exploration and development include: ? Exposure of sensitive resources to dissolved and dispersed oil, including Benzene-Toluene-Ethylbenzene-Xylene (BTEX), phenols, aliphatic and aromatic hydrocarbons (e.g., polycyclic aromatic hydrocarbons or PAHs), carboxylic acid, other volatile and semi-volatile organics and potentially, heavy metals, and their effects on biota managed by the Service. Also, adverse perturbations in the ecosystem upon which Service trust resources rely due to exposure of any ecosystem component to these substances. ? Exposure and recovery of sensitive resources to response activities (e.g., use of heavy equipment, trenching and digging, use of dispersants or in-situ burns, etc.). ? The effect of any interaction between climate change and adverse exposure to oil or other hazardous substances on the fitness of Service trust resources on the individual and population levels. ? Lack of logistic capacity to respond to spills in the 1002 area, and limited capacity elsewhere on the North Slope.	This EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1), Section 20001(a)(2) the Tax Act assigns BLM the sole responsibility for making oil and gas program decisions.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Tim	Whitehouse	PEER	95601	33	Solid and Hazardous Waste	What are key information gaps? ? NRDA pre-assessment data identified as “information gaps” under other Reporting Templates. These include biological and other trust resource survey data. For example, date-specific locations, species, numbers, and habitat-based activities (e.g., breeding, staging) of waterfowl and shorebirds. If breeding in the Arctic, quantitative information on reproductive success. These data would also help inform contingency planning and spill response activities, including identification of resources at risk. ? Oil spill response plans and contingency plans, based on seismic project applications and NEPA project descriptions. ? Full disclosure, characterization, and tracking of hazardous materials, including potential proprietary mixtures, for spill planning purposes. Including ecological toxicity data for both components and mixtures of hazardous substances. What studies/surveys need to be conducted to fill those information gaps? ? Identify shoreline segments for Shoreline Classification and Assessment Techniques (a spill response technique used when assessing the degree of oiling). ? Evaluate data layers in Arctic ERMA and other oil spill planning tools to determine suitability for adequate spill response relative to proposed activities. Inland areas are especially data poor. ? Evaluate project-specific oil spill response plans, focusing on how fish and wildlife resources are addressed. ? NRDA pre-assessment data needs to be enumerated in other Reporting Templates. ? Area specific surveys of wildlife presence, numbers, and reproductive success, addressing all times of the year. ? Toxicity testing on wildlife.	This EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary. The lessee/operator/contractor would be required to follow the Waste Management Plan for all phases of exploration, development, and production as identified in ROP 2. Although BLM intends to consult with the USFWS as noted in Table 2-2 (footnote 1), Section 20001(a)(2) the Tax Act assigns BLM the sole responsibility for making oil and gas program decisions.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Harry K.	Brower Jr.	North Slope Borough	95612	35	Solid and Hazardous Waste	In discussing the effects associated with solid and hazardous wastes, the DEIS does not address per- and polyfluoroalkyl substances (PFAS) or the emerging science regarding the health effects of these substances. PFAS are included in substances utilized by the oil and gas industry, most prevalently in firefighting foams. Because PFAS have been recognized as an emerging contaminant issue in the Arctic, we recommend that BLM include an analysis of the potential effects associated with thcsc chemicals	Text has been added to ROP 2.
59.	Greta	Burkart	—	96243	76	Solid and Hazardous Waste	F.4.11 Solid and Hazardous Waste Comments Actions affecting the resource should include injection of hazardous fluids. National Research Council 2003. Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope. Washington, DC: The National Academies Press. https://doi.org/10.17226/10639 . Note -the 1002 area of the Arctic Refuge has freshwater reservoirs that feed deep groundwater springs that support the most productive freshwater communities in the area. These deep freshwater reservoirs and spring-fed habitats are rare or absent in the developed areas in the NPR-A. In the developed areas of the NPRA most deep-water reservoirs are considered too saline to be considered drinking water and potential for contamination of these sources by injection of hazardous waste is not considered a potential impact even though it does occur.	Injection wells are regulated by federal and state agencies. When a specific project is proposed, it will be required to comply with federal and state regulations.
60.	Anon	M	—	97937	2	Solid and Hazardous Waste	clude a more complete estimate for all oil spills of all sizes, not just the large ones over 100,000 barrels	Text has been added to Section 3.2.11. A review of ADEC data of North Slope spills between 1995 to 2018, recorded an annual average of nearly 400 spills. During this same period, 44 spills greater than 10,000 gallons and six greater than 100,000 was recorded.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	—	—	United States Fish and Wildlife Service	97942	206	Solid and Hazardous Waste	F-18, F.4.11 Actions affecting the resource should include injection of hazardous fluids.	Injection wells are regulated by federal and state agencies. When a specific project is proposed, it will be required to comply with federal and state regulations.
62.	—	—	United States Fish and Wildlife Service	97942	210	Solid and Hazardous Waste	Page 3-61, first bullet list: Clearly list other hazardous materials by chemical name, as has been done for methanol, propylene glycol, and ethylene glycol. Include the constituents of the industrial product types that are currently listed.	Included additional industrial product by chemical name and referenced similar to BLM 2004. The list of chemicals will be refined when a specific project is proposed.
63.	—	—	United States Fish and Wildlife Service	97942	211	Solid and Hazardous Waste	Page 3-62, Paragraph I: This analysis should use all of the most recent information to describe past spill frequency and volume, not just information in BLM 2014, Section 4.5.2, including all information in the National Response Center (NRC) database (at http://nrc.uscg.mil/).	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	—	—	United States Fish and Wildlife Service	97942	212	Solid and Hazardous Waste	Oil or other hazardous spills within the Arctic National Wildlife Refuge Coastal Plain are low probability, but high consequence, events. We agree that the probability for a large oil or other hazardous material spill is low, as discussed on page 362. However, the consequences of even small (pages 3-61-3-62) spills in the otherwise pristine environment would result in significant changes from the environment as it is currently managed for non-extractive Refuge purposes. Except for areas outside the area boundaries (e.g., DEW Line sites, Kaktovik), the Coastal Plain of the Arctic Refuge is perhaps the only Arctic region on the planet that has not experienced industrial activity and subsequent contamination, as demonstrated by baseline contaminants data (Snyder-Conn and Lubinski 1993, Vols. 2 and 3). Therefore, this EIS should discuss the consequences of an oil or hazardous material spill due to post-lease activities within the unimpacted portion of the action area, on all potentially impacted resources (water, soil and sediments, biota including microbes, invertebrates, plants, fish, and FWS trust resource birds and mammals).	Section 3.2.11 discusses spill impacts from post-lease activities.
65.	—	—	United States Fish and Wildlife Service	97942	213	Solid and Hazardous Waste	The DEIS does not clearly discuss the risk of spills in the marine shipping lanes, from Unalaska to Kaktovik, which were identified as part of the project area. Recommend expanding the discussion of spill risk to all identified parts of the project area, see Ryder et al. 2010; Schuster et al. 2018; Snyder-Conn & Lubinski 1993a & 1993b.	As discussed in the Reasonably Foreseeable Development Scenario (Appendix B), barge activity is assumed for providing supplies and modules. Barging is not discussed as a shipping method for crude oil. Produced oil would not be shipped through the Beaufort, Chukchi or Bering Seas. See Section 3.3.5 Marine Mammal for discussion of spill impacts.
66.	Dorothy	Shockley	—	98120	1	Solid and Hazardous Waste	there is no Coast Guard or plan for cleanup if there was an oil spill. There is no Coast Guard on the western or the northern side of the state. They are all on the south, southwest and southeast areas.	At the time of a site-specific proposal, the operator will be required to submit a spill response plan.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Brook	Brisson	Trustees for Alaska	98269	75	Solid and Hazardous Waste	The DEIS states that "[i]n the NPR-A the average crude oil spill rate from 1985 to 2010, for large (500 barrels or greater) spills is 0.65 spills per BBO produced, with an average spill size of 1,229 barrels. During that time the North Slope produced a total of 12.40 BBO. The historic small (less than 500 barrels) crude oil spill rate from 1989 to 2009 for the Alaska North Slope is 187 spills per billion barrels produced, with an average spill size of 2.8 barrels (117.6 gallons). During this time 9.4 BBO were produced (BLM 2012)." ⁴⁷⁶ This analysis is inadequate as the spill data have not been updated by BLM for roughly ten years. We request that BLM use the most recent North Slope spill data available from the Alaska Department of Environmental Conservation (DEC) for its spill analysis.	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Brook	Brisson	Trustees for Alaska	98269	76	Solid and Hazardous Waste	Moreover, the table presenting the relative rate of occurrence for spills is taken from a 2004 EIS.⁴⁷⁷ There is no indication that BLM has updated this information or otherwise confirmed whether it is still correct. The source of that information - the 2004 Alpine Satellite Development Plan EIS - indicates that the information is not only out of date, but questionable to begin with. In describing the presentation of this information in the Alpine EIS, BLM stated that it is a subjective evaluation, not necessarily a statistically-based quantitative assessment.⁴⁷⁸ BLM must ensure that its spills information and analysis is based on up-to-date information and scientifically sound. Another source of spill data and analysis that BLM should utilize is a State of Alaska report completed in November 2010.⁴⁷⁹ The authors reviewed over 6,000 North Slope spills from 1995-2009 and the report showed that there were 44 loss-of-integrity spills each year 480 with 4.8 of those each year greater than 1,000 gallons,⁴⁸¹ meaning that there is a spill of 1,000 gallons or more nearly every two months. BLM also did not analyze in the draft EIS the biggest, most damaging spills. BP's March 2006 spill of over 200,000 gallons was the largest crude oil spill to occur in the North Slope oil fields and it brought national attention to the chronic nature of such spills. Another pipeline spill in August 2006 resulted in shutdown of BP's production in Prudhoe Bay and brought to light major concerns about systemic neglect of key infrastructure. BLM needs to analyze likely impacts from the worst-case spills.	The EIS uses historical North Slope spill data from several years of operations to estimate the type, number and size of potential spills. NEPA does not require a worst case scenario analysis. The original NEPA regulation 40 CFR 1502.22(b) was amended in 1986 to remove the worst case scenario analysis requirement.

S. Public Comments and BLM Responses (Solid and Hazardous Waste)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	Brook	Brisson	Trustees for Alaska	98269	77	Solid and Hazardous Waste	BLM also states that the spill rate may decrease over time as industry practice changes. ⁴⁸³ This is an unsupported conclusion. Spills have occurred and continue to occur across the North Slope. BLM must explain its basis for this conclusion with specificity.	Language has been clarified on page 3-62
70.	Brook	Brisson	Trustees for Alaska	98269	78	Solid and Hazardous Waste	Another missing component in BLM's analyses that it must include in the EIS are produced/process water and hazardous materials spills. These releases can damage the tundra and surface waters and are required to be reported to Alaska DEC. BLM should utilize DEC's produced/process water and hazardous materials spill reports to compile additional spill analysis and analyze these likely spills and impacts.	DEC data from 1995 to 2018 has been included in Appendix I and includes all hazardous material spills, including produced/process water.
71.	Brook	Brisson	Trustees for Alaska	98269	79	Solid and Hazardous Waste	There have been several blowouts - also known as uncontrolled releases from wells - in recent years on the North Slope. BP had two blowouts from existing production wells in April 2017 and December 2018, and Repsol had a blowout in February 2012 from an exploration well. All of these blowouts had some oil released and posed worker safety hazards. Table 3-15 shows the risk of blowouts with oil spills of any size to be Very Low. Given these three recent onshore incidents on the North Slope, the risk of a blowout with full-scale development on the Coastal Plain does not appear to be Very Low as stated in the DEIS. Working with the Alaska Oil and Gas Conservation Commission, BLM should reassess this risk in revising the EIS.	Additional text has been added to Section 3.2.11. The Alpine Final EIS 2004 describes the probability of a well blowout as rare, or one event per 1,000 wells between 1971 and 2001. DEC data from 1995 to 2018 has been reviewed and the conclusions made are still valid.
72.	Brook	Brisson	Trustees for Alaska	98269	80	Solid and Hazardous Waste	BLM also should assess the risks and consequences of spills in or reaching nearshore waters in the Beaufort Sea or occurring in rivers during times when there is running water not covered by ice. This is lacking from the EIS.	See Table 3-14 in Section 3.2.11 for description of spill characteristics in the Beaufort Sea by season. Spills to the Beaufort Sea are not anticipated during winter operations as there will be no marine transport during this time.

S.3.39 Special Designations

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Brita	Mjos	—	17139	1	National Wildlife Refuge	The new oil and gas development purpose of the Arctic Refuge conflicts with the other purposes of the refuge. Oil and gas development will degrade subsistence resources and access to those resources including wildlife, plants, water, and air quality, among others. The Fish and Wildlife Service in 2015, after an extensive analysis, recommended wilderness protection for the coastal plain to Congress.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program.
2.	Jane	Heisler	—	54194	1	National Wildlife Refuge	Your EIS fails to consider how oil and gas development will interfere with the U.S. Fish and Wildlife Service's administration of the Coastal Plain.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31.. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
3.	Evan	Sterling	—	55119	1	National Wildlife Refuge	To offer leases that could lead to oil and gas development would conflict with the four primary purposes for the refuge as outlined in the Act	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
4.	Withheld	Withheld	—	55397	1	National Wildlife Refuge	Oil and Gas leasing, just recently appended to ANILCA is not and can not be compatible with the other 4 purposes of ANILCA.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Nancy	Waterman	—	56488	1	National Wildlife Refuge	To provide for an oil and gas program on the Coastal Plain. (P.L. 115-97, added in December 2017, with the passage of the tax bill) The recently added purpose (v) is not compatible with the 4 original purposes. The draft EIS must explain how the USFWS and BLM will address this and ensure that purposes i-iv are not diminished or otherwise compromised by an oil and gas program on the coastal plain. Including oil and gas as a refuge purpose could require the USFWS to prepare a compatibility determination as part of BLM's development of the oil and gas program; this has not yet occurred.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
6.	Withheld	Withheld	—	56726	1	National Wildlife Refuge	Your Environmental Impact Statement (EIS) fails to consider how oil and gas development will interfere with the U.S. Fish and Wildlife Service's administration of the Coastal Plain. It fails to guarantee that the wilderness, conservation, and subsistence purposes for which the Arctic Refuge was first set aside in 1960 will continue to be protected.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
7.	Withheld	Withheld	—	56788	1	National Wildlife Refuge	The Arctic National Wildlife Refuge (ANWR) was established with the specific purpose of protecting "unique wildlife, wilderness, and recreational values". Opening up the ANWR Coastal Plain to hydrocarbon exploration and development is contrary to these originally stated core goals. I understand that the BLM is legally bound by the December 2017 Tax Bill (PL 115-97), but strongly feel that this law is at odds with the original stated purposes of ANWR.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	—	57216	1	National Wildlife Refuge	ANWR was established to conserve wildlife. Oil development is completely incompatible with the original intent of the Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
9.	Dina	Clark	—	57301	1	National Wildlife Refuge	The BLM has failed to consider how oil and gas activities will interfere with the U.S. Fish and Wildlife Service's oversight of the Coastal Plain, or to ensure that the wilderness, conservation, and subsistence purposes for which the Arctic Refuge was first set aside in 1960 and later expanded in 1980 will continue to be protected.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
10.	Anne	Millbrooke	—	58436	1	National Wildlife Refuge	I saw nothing that acknowledged fully why the Arctic Refuge was designated a refuge and the importance of that designation to the ecological integrity of the region and the necessity of continuous and large areas for an arctic ecological system to operate and survive.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
11.	Withheld	Withheld	—	62945	1	National Wildlife Refuge	The BLM failed to consider how oil and gas development will interfere with the U.S. Fish and Wildlife Service's administration of the Coastal Plain. It fails to guarantee that the wilderness, conservation, and subsistence food resources for which the Arctic Refuge was first set aside in 1960 will continue to be protected.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Withheld	Withheld	—	66306	1	National Wildlife Refuge	The proposed action does not allow proper management as a wildlife refuge for which the area was established in 1960.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
13.	Joelle	Buffa	—	67158	1	National Wildlife Refuge	Likewise, Alternatives B and C should be dismissed because the exploration, development, production and related activities stemming from oil and gas leasing would be in direct conflict with at least two of the Refuge Purposes stated on Table 3-31 (page 3-209): (i) to conserve fish and wildlife populations and habitats in their natural diversity, and (ii) to fulfill the international fish and wildlife treaty obligations of the US. Alternatives Band C probably also conflict with Refuge Purposes (iii) and (iv) regarding providing subsistence rights and ensuring water quality, but since my professional expertise is in natural resources I'll focus on wildlife issues that concern me.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
14.	Armando	Garcia	—	67655	4	National Wildlife Refuge	The Arctic National Wildlife Refuge was established in part to conserve wildlife and protect subsistence uses. If the refuge is opened to oil and gas development, how will those goals be met?	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Withheld	Withheld	—	68965	94	National Wildlife Refuge	67. Chapter 3; section 3.4.7, pages 3-209 to 3-217. Special Designations. All four of the original objectives of the Arctic National Wildlife Refuge listed in Table 3-31 are mutually consistent, complementary, and can therefore be implemented in a way that is coherent and successful. The oil and gas program is neither consistent nor complementary to the other objectives; it is contrary to the other objectives. The proposed leasing program fundamentally subverts all of the Refuge's other objectives and relegates them to subordinate status for the term of the leasing program, which is estimated to last up to 130 years according to the hypothetical development scenario in Appendix B. Please consider revising the effects analysis regarding Special Designations to include more plain statements about how contrary the proposed program is to the CCP. In a pristine and sensitive environment like the Coastal Plain, we cannot pretend to have our cake and eat it, too. This program represents a choice of one use over others. We shouldn't pretend that we can design the action, mitigate its effects, or remediate its impacts in ways that are consistent with other Refuge objectives.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
16.	Curt	Leigh	—	69329	1	National Wildlife Refuge	The EIS identifies significant long term adverse impacts on the resources that the Arctic National Wildlife Refuge was established to preserve. Those resources include fish, wildlife, and their unique habitats in addition to associated recreational opportunities.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Kathleen	Miller	—	69335	2	National Wildlife Refuge	While the Tax Act authorized drilling on the Coastal Plain, it didn't change the fact that Arctic Refuge remains a National Wildlife Refuge, and it should still be managed like one. BLM failed to consider how oil and gas development will interfere with the U.S. Fish and Wildlife Service's administration of the Coastal Plain. It fails to guarantee that the wilderness, conservation, and subsistence purposes for which the Arctic Refuge was first set aside in 1960 will continue to be protected.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
18.	Withheld	Withheld	—	69634	1	National Wildlife Refuge	Oil leasing and related development would destroy the wild quality of both the targeted Coastal Plain and nearby designated Wilderness within the Arctic Refuge. The DEIS fails to honestly address such loss	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31.
19.	Becky	Long	—	69710	15	National Wildlife Refuge	The first priority after all must be the specific purpose of the Refuge which was established under ANILCA which is to ensure "water quality and necessary water quantity within the refuge" to conserve fish, wildlife and habitats.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
20.	Withheld	Withheld	On behalf of 312 scientists	71076	1	National Wildlife Refuge	The DEIS does not address or remedy the conflict between the oil and gas program and the other purposes for which the refuge was established. Those other purposes-including to conserve fish and wildlife populations and habitats in their natural diversity, ensure water quality and necessary water quantity, and fulfill international treaty obligations-must be fully addressed in the DEIS and honored on the ground. For instance, while oil and gas activity would require millions of gallons of water for facilitating drilling and building ice roads, the DEIS does not provide a comprehensive assessment of projected overall water use. The DEIS then fails to explain how potentially massive water withdrawals would impact the scarce water resources on the Arctic Refuge Coastal Plain (including springs, icings, lakes, rivers and streams, and coastal lagoons) and their ecological and habitat functions. Notwithstanding the legislative addition of an oil and gas program to the refuge's purposes, the DEIS must explain how the original refuge purposes of water and fish and wildlife conservation will be upheld in the face of fossil fuel development.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
21.	Withheld	Withheld	The Wildlife Society - Alaska Chapter	72005	1	National Wildlife Refuge	It is important that the DEIS explicitly address the conflicting Refuge purposes. The DEIS does not explicitly address or resolve potential conflicts between the proposed leasing program and the original four purposes (identified above) for which the Arctic Refuge was established. These conflicts must be explicitly discussed and resolved. Specifically, the DEIS must address how the original Refuge purposes for wildlife, fish, and water conservation, treaty obligations, and subsistence uses will be maintained through petroleum exploration and development.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Withheld	Withheld	—	72125	4	National Wildlife Refuge	The purposes of the Arctic Refuge, including the Coastal Plain, are defined by a Public Land Order, ANILCA, and other laws and regulations. The Arctic National Wildlife Range was established in 1960 by Public Land Order 2214 for the purpose of preserving unique wildlife, wilderness and recreational values. The purposes for which the Arctic National Wildlife Refuge is established and shall be managed include (ANILCA Sec. 303(2)(B)): (i) To conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling; This purpose of is consistent with the Refuge's original intent to be inclusive of all species, ANILCA Section 102(17) clarifies, "[t]he term 'fish and wildlife' means any member of the animal kingdom...." The Arctic Refuge is to provide for the natural interactions, dynamics, cycles, and processes within and between species in these areas. (ii) To fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats; This purpose recognizes the role the Refuge plays in meeting several treaty obligations related to conservation of the fish, caribou, and polar bears that inhabit both Alaska and Canada, and the migratory birds shared by many nations. (iii) To provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; ANILCA Title VIII provides a number of provisions to ensure that, consistent with other Refuge purposes, rural residents have the	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	continued opportunity to use Refuge lands and resources to meet their physical, economic, traditional, and other needs. (iv) To ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge; and This purpose recognizes that the protection of water resources is central to conservation of fish and wildlife and their encompassing ecological systems and processes. This purpose establishes an explicit, but unquantified, Federal reserved water right for surface waters and groundwater in the Refuge for fish and wildlife populations and habitats. (v) To provide for an oil and gas program on the Coastal Plain. (P.L. 115-97, ANILCA Amendment) This secondary purpose provides for an oil and gas leasing program, but does not override or diminish the need to provide for surface resource purposes and protecting those values.	(see above)
23.	Withheld	Withheld	—	72125	57	National Wildlife Refuge	A leasing availability decision-the tracts of land that will be offered for lease and the terms and conditions to be applied to such leases-must ensure that any oil and gas program on the Coastal Plain will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission and the Arctic Refuge purposes of (1) conserving fish and wildlife populations and habitats in their natural diversity, (2) ensuring to the maximum extent practicable and in a manner consistent with the purposes of conserving fish and wildlife populations and habitats, water quality and necessary water quantity within the refuge, and (3) protecting other surface resource values.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Richard	Edwards	—	74281	56	National Wildlife Refuge	The Draft EIS fails to identify and address the impacts of oil and gas exploration and development on the ability of the U. S. Fish and Wildlife Service to manage the Refuge in concert with its intended purposes. ANICLA provided four purposes that guide management of the Refuge: to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations. In short, USFWS is mandated to provide for the long-term protection of this globally significant landscape. How will the ability of the USFWS to successfully manage the Coastal Plain for these purposes be impacted in both the short and long-term by the proposed activities?	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Lisa	Baraff	Northern Alaska Environmental Center	74306	10	National Wildlife Refuge	Before the Tax Cuts and Jobs Act, the seven purposes for the Arctic Refuge and the Coastal Plain included three from the original 1960 Range designation and four added by ANILCA in 1980: 1) preserving wildlife values; 2) preserving wilderness values; 3) preserving recreation values; 4) conserving fish and wildlife and habitat; 5) meeting international treaty obligations regarding fish, wildlife, and habitat; 6) continuing to provide for subsistence; and 7) protecting water quantity and quality needed to meet fish, wildlife, and habitat needs. Although BLM acknowledges the four ANILCA purposes (4-7 above), it repeatedly fails to adequately address the original three purposes from the 1960 Range designation among the recognized Arctic Refuge purposes in the DEIS. These original purposes must be considered when identifying the Refuge purposes with which the oil and gas program must be consistent. For instance, failing to acknowledge that protecting wilderness is a purpose of the Coastal Plain, as part of the Refuge, BLM excludes stipulations or required operating procedures that would protect these values on the Coastal Plain. The one alternative that includes a wilderness-related stipulation attempts to protect wilderness values in the Mollie Beattie designated Wilderness area of the Refuge and not elsewhere. The Tax Act added an additional purpose to provide for an oil and gas program on the Coastal Plain, but did not prioritize this purpose above the others. The seven original purposes cannot be subsumed by this newly added purpose. BLM fails to address how the proposed oil and gas program and the different action alternatives in the DEIS will impact the previously existing purposes and how the Fish and Wildlife Service's (FWS) administration of the Refuge to ensure the refuge purposes will be met, which is required by law.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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26.	Allen E.	Smith	—	74324	2	National Wildlife Refuge	This additional purpose is inconsistent with the legally established ANILCA purposes of the Refuge listed above because it will contravene those ANILCA purposes and cause lasting damage to animal and plant diversity, disrupt subsistence activities, upset water quality and quantity, and disregard international wildlife protection obligations legally demanded by those ANILCA purposes.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
27.	Jeff	Walters	—	74343	1	National Wildlife Refuge	It does not analyze how development will interfere with the original purposes of the Refuge ("to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations")	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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28.	Withheld	Withheld	—	75135	1	National Wildlife Refuge	The US Fish and Wildlife Service states that "[t]he Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. (Mission Statement, https://www.fws.gov/refuges/about/mission.html) The management of the Coastal Plain of the Arctic Wildlife National Refuge should remain true and consistent with this designation. The Coastal Plain warrants designation as wilderness, as recognized in the refuge's current comprehensive management plan. (https://www.fws.gov/home/arctic-ccp/pdfs/Executive_Summary_Jan2015.pdf) Provisions in PL 115-97 directing BLM to lease land in Coastal Plain for oil and gas exploration and production upends the purpose of ANWR's national wildlife refuge designation and the natural and cultural importance of conserving and protecting this area. The provisions in PL 115-97 to open the Coastal Plain to oil and gas development, ostensibly for the purpose of funding the ill-considered and regressive tax cuts also contained in the law, moves us in the exact opposite direction we need to go to combat the disruptive effects of global warming.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Withheld	Withheld	—	75145	1	National Wildlife Refuge	The established purposes of the Arctic National Wildlife Refuge are ?"to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations.?" ?The 2017 Tax Act (LawNo: 115-97) added a fifth purpose of the Refuge "to provide for oil and gas program on the Coastal Plain" Oil and gas is entirely inconsistent with the purposes of the Refuge because it will cause lasting damage to the animal and plant diversity, disrupt subsistence activities, upset water quality and quantity, and disregard international wildlife protection obligations. ? The DEIS fails to analyze how the oil and gas development will interfere with the originally stated purposes of the Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
30.	Withheld	Withheld	Alaska Wilderness League	75162	1	National Wildlife Refuge	BLM's draft EIS is in direct tension and at cross-purposes with the conservation purposes of the Refuge under the Alaska National Interest Lands Conservation Act (ANILCA), and ignores blatant inconsistencies, leaving the public to speculate on how BLM will resolve these tensions.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
31.	Deanna	Noel	Defenders Of Wildlife	75598	2	National Wildlife Refuge	the draft DEIS does not address 21· ·conflicting refuge purposes, and it does not address 22· ·a remedy, the conflict between oil and gas programs 23· ·and other purposes for which the refuge was 24· ·established.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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32.	Andrew	Ogden	—	75704	2	National Wildlife Refuge	The Tax Act rewrites the purpose of the Arctic National Wildlife Refuge as stated in ANILCA (1980) to include providing “for an oil and gas program on the Coastal Plain.” It should be noted that the purpose of the Refuge was expanded by the Tax Act by adding oil and gas leasing as one of the uses for the Refuge, but did not supplant those pre-existing uses nor prioritize oil and gas development over them. Any development of the 1002 Area must be in harmony with the pre-existing uses, a priority that is not reflected in the action Alternatives in the DEIS.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
33.	Withheld	Withheld	—	79888	1	National Wildlife Refuge	The DEIS fails to analyze how the oil and gas development will interfere with the originally stated purposes of the Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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34.	Withheld	Withheld	Alaska Wilderness League	81382	1	National Wildlife Refuge	Under ANILCA, the first purpose for protecting the Arctic Refuge is to: (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling; BLM does not address in the draft EIS how this purpose is honored in an Arctic Refuge Coastal Plain oil and gas program, and the best available science shows that intractable conflicts are near-certain. For example, experts say that seismic exploration is likely to harm and perhaps even kill polar bears. Experts also affirm the likelihood that the death of such polar bears- from the Southern Beaufort Sea polar bear subpopulation, the most sensitive stock of polar bears in the U.S.-could have population-level impacts on the entire already stressed population. BLM must address in the draft EIS how it intends to handle such seemingly inevitable conflicts, rather than simply ignore them as the industrial development steamroller advances.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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35.	Withheld	Withheld	Alaska Wilderness League	81382	6	National Wildlife Refuge	Further, DOI is impermissibly opaque in how it treats explicit conflicts between consumptive and non-consumptive purposes of the Arctic Refuge. The resulting tension creates intense ambiguity about how BLM will resolve this fundamental issue, and omissions and inconsistencies present throughout BLM's draft EIS further confound and inhibit public understanding. The public deserves, and the law requires, transparency regarding how BLM intends to manage public lands, and BLM's draft EIS fails to provide that, with severe and devastating implications on the Refuge's wildlife, communities in and around the Refuge, and all Americans, to whom the Arctic National Wildlife Refuge belongs.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
36.	Withheld	Withheld	—	83334	2	National Wildlife Refuge	The FWS is required by law to have refuge plans. Each plan must address both the immediate land in the designated boundary of the refuge and its relationship in the refuge system (across refuges). ANWR is a critical part of a system of flyways, breeding grounds, and habitats that many species rely on. The impact of proposed leases needs to address not only cumulative effects over time in ANWR but also impacts across the network of travel ways that wildlife species use. The documents published to date do not recognize or honor refuge planning requirements.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
37.	Withheld	Withheld	—	90316	1	National Wildlife Refuge	Oil / gas development is inconsistent and in opposition to the original purposes of the Refuge, and will cause lasting harm to its ecosystem.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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38.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	1	National Wildlife Refuge	The DEIS failed to provide any detailed and thorough scientific analysis how the proposed oil and gas development may interfere with the originally stated purposes of the Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
39.	Withheld	Withheld	—	92034	1	National Wildlife Refuge	The established purposes of the Arctic National Wildlife Refuge are “to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations.” The 2017 Tax Act (Law No: 115-97) added a fifth purpose of the Refuge “to provide for oil and gas program on the Coastal Plain” Oil and gas is entirely inconsistent with the purposes of the Refuge because it will cause lasting damage to the animal and plant diversity, disrupt subsistence activities, upset water quality and quantity, and disregard international wildlife protection obligations. The DEIS fails to analyze how the oil and gas development will interfere with the originally stated purposes of the Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
40.	Ruth	Wood	—	92475	3	National Wildlife Refuge	the Draft EIS must look at all the purposes of the Refuge, not just the newly inserted purpose to lease for oil & gas development. That means BLM must consider whether the No Drill Alternative is the best alternative for any of the purposes, and state for which purposes the No Drill Alternative would be the best. There is no question that the No Drill Alternative is the best alternative for subsistence users, for the Porcupine caribou herd, for the polar bear. The Draft EIS ignores every thing except the Tax Bill, and that is not the proper way to do a Draft EIS.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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41.	Withheld	Withheld	—	92581	1	National Wildlife Refuge	The DEIS fails to acknowledge the originally stated purposes of the Arctic Refuge and fails to analyze how these purposes will be upheld with the addition of oil and gas leasing. Oil and gas development WILL interfere with the originally stated purposes of the Refuge. These lease sales will cause lasting damage to the animal and plant diversity, disrupt subsistence activities, upset water quality and quantity, and disregard international wildlife protection obligations.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
42.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	18	National Wildlife Refuge	The DEIS does not consider how oil and gas leasing would impact the conservation purposes of the Arctic National Wildlife Refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
43.	Elizabeth	Hale	—	94090	3	National Wildlife Refuge	Energy development is not compatible with its purposes as stated in the Alaska National Interest Lands Conservation Act: to “conserve fish and wildlife populations and habitats in their natural diversity”; to honor fish and wildlife treaty obligations; subsistence use; and to maintain water quality and quantity.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
44.	Pamela	Miller	—	94107	2	National Wildlife Refuge	Although BLM said, “the oil and gas leasing program must consider the Arctic Refuge purposes set out in Section 303(2)(B) of ANILCA, as amended by Section 20001 of PL 115-97,” (DEIS p/1/1), the it should clearly state that it also must consider the purposes “of preserving unique wildlife, wilderness and recreational values,” established by PLO 2214 when the original refuge was established in 1960 and remain in effect today.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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45.	Withheld	Withheld	—	94532	4	National Wildlife Refuge	The Arctic National Wildlife Refuge was established and remains necessary to conserve these birds and wildlife, and preserve wilderness and recreational values, subsistence use, and more. Oil development completely threatens any original purpose of the Refuge, and undeniably will cause lasting damage to wildlife and wilderness characteristics, and to the people who depend on them.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31.
46.	Withheld	Withheld	—	95024	2	National Wildlife Refuge	I note that Public Law 115-97 states that "Section 1003 of the Alaska National Interest Lands Conservation Act (16 U.S.C. 3143) shall not apply to the Coastal Plain." And that the oil and gas program shall be administered similar to lease sales under the Naval Petroleum Reserves Production. These designations completely undermine the "four purposes that guide management of the entire Refuge: to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations." [https://www.fws.gov/refuge/Arctic/about.html] The new law does not relieve the BLM of ANILCA's original intent; it adds a new function, but that function is in direct conflict with the original purposes.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
47.	Withheld	Withheld	—	95748	2	National Wildlife Refuge	The Arctic National Wildlife Refuge was established in part to conserve wildlife and protect subsistence uses. If the refuge is opened to oil and gas development, clearly those goals will not be met.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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48.	Brook	Brisson	Trustees for Alaska	96981	4	National Wildlife Refuge	In the 1987 Report to Congress, DOI stated that the Coastal Plain "area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity." ¹⁶ Despite the many flaws with the analysis in the Report, it nevertheless concluded that oil and gas production would likely have major effects on the Porcupine Caribou Herd and muskoxen. Specifically with regards to caribou, those effects include "widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution of species." ¹⁷ The Report also found that full or even limited leasing would have major impacts on water resources, subsistence for residents of Kaktovik, and recreation, wilderness, and aesthetics. ¹⁸ Where DOI's findings in the LEIS differ from BLM's findings in this EIS, BLM must explain the basis for this difference. Despite these findings, the Secretary of the Interior (Secretary) recommended leasing the entire Coastal Plain area. ¹⁹ For decades, Congress and the President declined to do so. BLM must recognize and describe this history in the draft EIS to ensure that it is fully considering the purposes and resources of the Coastal Plain, as well as accurately acknowledging the public support for its protection.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. See the Terrestrial Mammals section of the response to comments for further clarification on how impacts to caribou and muskoxen have been updated in the Final EIS. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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49.	Brook	Brisson	Trustees for Alaska	96981	5	National Wildlife Refuge	Throughout the CCP process, FWS properly declined to consider oil and gas development on the Coastal Plain. ²⁸ Specifically regarding the management of the Arctic Refuge and the lack of consideration of oil and gas development in the CCP process, the CCP states: Until Congress takes action to change the provision of ANILCA 1003 or to implement the 1987 report, the Service will not and cannot permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. When Congress makes a management decision, that action will be incorporated into the Plan and implemented. ²⁹ Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain. BLM fails to acknowledge or account for these inconsistencies, or to explain how the oil and gas program it is proposing impacts current Refuge management. ³⁰	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.
50.	Deanna	Noel	Defenders Of Wildlife	97156	2	National Wildlife Refuge	37The second point. They did not addressconflicting refuge purposes. The DIS does notaddress the remedy of the conflict between the oiland gas program and the other purposes for whichthis refuge was established, including conservationof fish and wildlife populations and habitats in thenational diversity, water quality necessary, waterquantity, and fulfill international treatyobligations. None of those are fully addressed.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. . PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
51.	Karimah	Schoenhut	Sierra Club	97751	3	National Wildlife Refuge	In addition to the ESA obligation to promote the conservation ofthe species as a whole, BLM must consider that ANILCA and the Refuge Act impose obligations on the Secretary of Interior to ensure that the primary purposes ofthe Refuge will continue to be satisfied.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. . PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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52.	Gail	Mayo	Arctic Audubon Society	97769	1	National Wildlife Refuge	The law (public law 115-970) that mandates oil and gas leasing program for the Coastal Plain is faulted in that it introduced a new purpose, oil and gas leasing, to the Arctic National Wildlife Refuge without a chance for any public input. Furthermore, this new purpose is inconsistent with established purposes, "to preserve animals and plants in their natural diversity". The DEIS does not address this major inconsistency.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. . PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
53.	John	Schoen	—	98097	2	National Wildlife Refuge	The DEIS does not address or remedy the conflict between the oil and gas program and the other purposes for which the refuge was established. Those other purposes include to conserve fish and wildlife populations and habitats in their natural diversity, ensure water quality and quantity, and fulfill international treaty obligations.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. . PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
54.	Pamela	Miller	—	98116	7	National Wildlife Refuge	The history of the refuge, why it was founded initially, as well as the additional four purposes for -- that were added under ANILCA to protect fish and wildlife and their habitats and populations in their natural diversity, water quality and quantity, subsistence uses and to uphold our international treaties on wildlife, those are core purposes for the refuge that exist today even with this element of oil and gas leasing mandated by Congress. So the EIS is deficient in considering those purposes of the refuge.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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55.	Brook	Brisson	Trustees for Alaska	98269	25	National Wildlife Refuge	BLM repeatedly fails to include the original three purposes from the 1960 Range designation among the recognized Arctic Refuge purposes in the draft EIS, acknowledging only the four ANILCA purposes.327 FWS policy is clear the original three purposes set out in PLO 2214 apply to the Coastal Plain equally.328 BLM must include the three purposes from PLO 2214 among the purposes of the Coastal Plain outlined in the draft EIS. Additionally, the BLM must include these three purposes with the ANILCA purposes when identifying the Refuge purposes with which the oil and gas program must be consistent. By not recognizing or including the original three purposes in its analysis, BLM cannot ensure that an oil and gas program would be consistent with Refuge purposes.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
56.	Brook	Brisson	Trustees for Alaska	98269	26	National Wildlife Refuge	Despite this clear and directly applicable policy, the EIS fails to recognize that the seven conservation purposes are the priority purposes for the Coastal Plain and BLM fails to address how the proposed program will impact these existing purposes. For example, the draft EIS does not specifically evaluate whether the existing purposes will be met by each alternative and does not include an analysis of whether the lease stipulations, required operating procedures, and proposed mitigation measures are sufficient to ensure that the pre-existing Refuge purposes will continue to be achieved.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

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57.	Brook	Brisson	Trustees for Alaska	98269	28	National Wildlife Refuge	We note that FWS has not proposed any compatibility determinations as part of this leasing EIS and there are no current compatibility determinations that cover the proposed oil and gas program. ³³⁸ It is unclear how the Secretary will ensure that compatibility mandates are complied with for the oil and gas program, or when FWS will propose compatibility determinations to cover the activities proposed by BLM in the EIS. No oil and gas activities, including a lease sale, can proceed prior to completion of a compatibility determination by FWS.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in the Draft EIS Table 3-31. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.
58.	Brook	Brisson	Trustees for Alaska	98269	29	National Wildlife Refuge	Currently, the Coastal Plain is managed under the Minimal Management category as set out in the CCP. ³⁴¹ Throughout the CCP revision process, FWS properly declined to consider oil and gas development on the Coastal Plain. ³⁴² ... Congress bound the Secretary to "manage the refuge . . . in a manner consistent with the plan." ³⁴⁴ Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain. In scoping comments, Groups flagged this issue and explained that the draft EIS must acknowledge this inconsistency. ³⁴⁵ The draft EIS, however, fails to explain how BLM and the Secretary are addressing this problem. For example, under Alternative A, BLM states that the "current management will be maintained." ³⁴⁶ But then when describing the impacts of oil and gas under the action alternatives, the draft EIS states that minimal management will have to change to account for the oil and gas program. BLM states on the one hand that "the minimal management standard for the Coastal Plain must now be adjusted to account for the oil and gas program," but then fails to explain how FWS's minimal management will be in fact adjusted. ³⁴⁷ Similarly, while BLM states that under Alternative A, the no-	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in the Draft EIS Table 3-31. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	action alternative, current management actions would continue, the agency does not explain how current management actions would be impacted under the three action alternatives. ³⁴⁸ It is important to note that under the Minimal Management category governing present use of the Coastal Plain, ³⁴⁹ many of the activities that BLM is considering as part of the oil and gas program are not permitted. ³⁵⁰ But BLM cannot take any action that is inconsistent with the CCP. Groups are deeply concerned that BLM is attempting to indirectly and implicitly amend or alter the CCP through this EIS process.	(see above)
59.	Brook	Brisson	Trustees for Alaska	98270	112	National Wildlife Refuge	To begin, BLM fails to account for the wilderness purpose of the Coastal Plain when the agency is identifying the area's purposes in the EIS. ¹⁷⁹⁰ As explained above, the three purposes from PLO 2214 apply equally to the Coastal Plain, and PLO 2214 specifically includes preserving the wilderness values as a purpose. BLM must acknowledge this purpose, and also acknowledge that it is a priority purpose for the Coastal Plain. Without doing so, the agency cannot accurately describe the impacts and magnitude of impacts of an oil and gas program on the wilderness characteristics of the Arctic Refuge and Coastal Plain.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Withheld	Withheld	—	72125	30	National Wildlife Refuge	The DEIS is proposing there would be barge landings, staging pads and a seawater treatment plant located along the coastline, connected to the CPF by thirty miles of road and pipeline in the Arctic Refuge Coastal Plain. In addition to each potential CPF, it is expected that a generator, airstrip, storage tanks, a communications center, waste treatment units, and a maintenance shop would be constructed on the anchor pad, as well as living quarters and offices on or off the pad. Hundreds of miles of gravel roads, and undisclosed miles of ice roads, would be constructed, and gravel mines unearth hundreds of additional acres. This proposed level of industrialization is clearly incompatible with fish, wildlife, and water values of the Refuge. The proposed activities would materially interfere with providing for Arctic Refuge surface resource purposes.	A list of where to find impacts from oil and gas leasing on Arctic Refuge purposes are in Draft EIS Table 3-31. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.
61.	—	—	Alaska Department of Natural Resources	94102	97	National Wildlife Refuge	The original Arctic Range purposes are referenced in the second paragraph as having "...three purposes of preservation: wilderness values, wildlife, and recreational values." The EIS must also reference the savings clause in ANILCA Section 305, which states that while executive or administrative enabling actions for existing units of the Refuge system are still in effect (the Arctic Range was established by Public Land Order 2214), in the event of a conflict, the provisions of ANILCA and the Alaska Native Claims Settlement Act prevail. As such, there are limits to the applicability of the original Range purposes, especially in relation to the new refuge purpose to establish and oil and gas leasing in the Coastal Plain.	This change has been made; text was revised as suggested in EIS Section 3.4.7.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	Brook	Brisson	Trustees for Alaska	98269	56	National Wildlife Refuge	Becoming a World Heritage Site has important value for increased tourism and wildlife protection. BLM needs to analyze the impacts to the U.S., including to Alaskan tourism and to the Porcupine Caribou Herd, of the Arctic National Wildlife Refuge no longer meeting the criteria to become a World Heritage Site due to oil development on the Coastal Plain. BLM also must analyze whether such development will have transboundary impacts on Canada's nomination of the adjacent Ivvavik/Vuntut/Herschel Island (Qikiqtaruk) as a World Heritage Site. The DEIS, however, does not even mention the Arctic Refuge's qualification for World Heritage Site designation or the fact that Canada has nominated the adjacent site (both important components of the affected environment), much less perform any analysis of the foreseeable domestic and transboundary impacts that oil and gas development will have on the areas' potential to become a World Heritage Site. BLM must perform such an analysis.	Impacts of the Coastal Plain being eligible for becoming a World Heritage Site would be considered when any future on-the-ground actions requiring BLM approval are further analyzed in the NEPA process, including coordination with the USFWS as the surface management agency based on the site-specific proposal.
63.	Withheld	Withheld	—	68965	95	Marine Protected Areas	A parallel argument applies to all other special designations discussed in this section (Marine Protected Areas, Wild and Scenic Rivers, Wilderness Areas). Impacts associated with the proposed oil and gas program are contrary to successfully meeting the objectives of these other designations. All proposed action alternatives represent a choice to prioritize oil and gas production over the values prioritized by all other special designations.	Any future on-the-ground actions requiring BLM approval, including exceptions, modifications, or waivers for potential exploration and development proposals, would require further NEPA analysis and coordination with the USFWS as the surface management agency based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project-level NEPA analysis.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Withheld	Withheld	—	69211	15	Marine Protected Areas	Page 3-46 Marine area buffers Comment: This section identifies marine protected areas, buffers and wild, scenic rivers. The plan should identify if and where there may be waivers requested and where the project will not be in compliance with existing regulations that protect habitat and buffer areas.	Any future on-the-ground actions requiring BLM approval, including exceptions, modifications, or waivers for potential exploration and development proposals, would require further NEPA analysis and coordination with the USFWS as the surface management agency based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project-level NEPA analysis.
65.	Elizabeth	Ballard	—	90951	34	Marine Protected Areas	The DEIS does not adequately analyze impacts to the MPA's natural resources. The DEIS merely lists the impacts that could occur from oil and gas development in the project area, ⁵⁷ without providing references, and without connecting the list of impacts to specific activities or phases of development. Nor does the DEIS provide the specific location or duration of these impacts, making it difficult to assess the likely level and type of impact. Instead, the DEIS leaves specific analysis to the future. ⁵⁸ The lack of explanation on where, when, and how these impacts would arise makes it impossible for the agency and for the public to accurately anticipate impacts to the MPA.	Any future on-the-ground actions requiring BLM approval, including exceptions, modifications, or waivers for potential exploration and development proposals, would require further NEPA analysis and coordination with the USFWS as the surface management agency based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project-level NEPA analysis.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Brook	Brisson	Trustees for Alaska	98270	135	Marine Protected Areas	The DEIS does not adequately analyze impacts to the MPA's natural resources. The DEIS merely lists the impacts that could occur from oil and gas development in the project area, 1858 without providing references, and without connecting the list of impacts to specific activities or phases of development. Nor does the DEIS provide the specific location or duration of these impacts, making it difficult to assess the likely level and type of impact. Instead, the DEIS leaves specific analysis to the future.1859 This is improper. The lack of explanation on where, when, and how these impacts would arise makes it impossible for the agency and for the public to accurately anticipate impacts to the MPA.	Any future on-the-ground actions requiring BLM approval, including exceptions, modifications, or waivers for potential exploration and development proposals, would require further NEPA analysis and coordination with the USFWS as the surface management agency based on the site-specific proposal. Potential applicants would be subject to the terms of the lease; however, the BLM Authorized Officer may require additional site-specific terms and conditions before authorizing any oil and gas activity based on the project-level NEPA analysis.
67.	Elizabeth	Ballard	—	90951	36	Marine Protected Areas	The DEIS offers only a short and inadequate cumulative impacts analysis for the MPA.60 The DEIS does not mention coastal erosion, or other climate change effects, that are slated to occur in the coastal zone, and how this could interact with the impacts from oil and gas development activities to impact the MPA. Instead, the cumulative impacts paragraph is a list of individual direct impacts that lack specificity on duration, location, and extent.	Coastal erosion impacts are discussed in the Draft EIS in Section 3.2.5, Geology and Minerals. See also climate impacts under Draft EIS Section 3.2.1.

S. Public Comments and BLM Responses (Special Designations)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Brook	Brisson	Trustees for Alaska	98270	135	Marine Protected Areas	The DEIS does not adequately analyze impacts to the MPA's natural resources. The DEIS merely lists the impacts that could occur from oil and gas development in the project area, 1858 without providing references, and without connecting the list of impacts to specific activities or phases of development. Nor does the DEIS provide the specific location or duration of these impacts, making it difficult to assess the likely level and type of impact. Instead, the DEIS leaves specific analysis to the future.1859 This is improper. The lack of explanation on where, when, and how these impacts would arise makes it impossible for the agency and for the public to accurately anticipate impacts to the MPA.	Coastal erosion impacts are discussed in the Draft EIS in Section 3.2.5, Geology and Minerals. See also climate impacts under Draft EIS Section 3.2.1.
69.	Brook	Brisson	Trustees for Alaska	98270	136	Marine Protected Areas	The DEIS does not acknowledge impacts to the MPA's cultural resources. One of the main purposes of an MPA is "the ecologically and economically sustainable use of the marine environment for future generations,"1860 including the sustainable harvest and consumption of fish and other marine resources. But the DEIS lacks any reference to the importance of protecting the MPA for cultural reasons. The agency must explain that the MPA is a protected area that is intended to conserve marine resources for both natural and cultural reasons, and explain how fossil fuel development in the Coastal Plain will impact the cultural resources contained within the MPA.	Impacts on cultural resources in the program area are discussed in Draft EIS Section 3.4.2.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Patrick	Tierney	—	70	2	Wild and Scenic Rivers	Why was there so little mention of the impacts to the four rivers that were determined to be suitable or eligible under the National Wild and Scenic Rivers Act? Surface occupancy restrictions are insufficient to mitigate impacts to the outstanding qualities of these rivers. The Hulahula and Jago, in particular, are extremely important for recreation, wildlife and subsistence and should remain in pristine condition. There is no mention in the EIS about designating at least the HulaHula and Jago Rivers as National Wild and Scenic Rivers as mitigation for the significant adverse impacts to their surrounding areas. We need at least one pristine river on the Arctic Plain. The revised EIS should contain the proposed designation of the Hulahula and Jago Rivers as National Wild and Scenic Rivers to protect them during leasing and any later energy development.	Rivers are designated in the National Wild and Scenic Rivers System as specified in the Wild and Scenic Rivers Act by 1) an act of Congress; or 2) the Secretary of the Interior. The BLM will continue to implement stipulations (e.g., Lease Stipulation 1 in Draft EIS Table 2-2), which protect rivers and streams in the program area.
71.	Withheld	Withheld	—	72125	45	Wild and Scenic Rivers	Wild and Scenic Rivers Comments (Section 3.4.7): The BLM should explain why the agency is adopting and tiering to the revised Comprehensive Conservation Plan and associated EIS to address Wild and Scenic River eligibility and suitability, while ignoring other CCP direction for the Coastal Plain. If the BLM is to adopt the CCP management recommendations for Wild and Scenic Rivers, shouldn't the BLM also adopt the complete CCP management direction for the Coastal Plain? PL 115-97 does not dictate that oil and gas development take precedent over the protection of the Outstandingly Remarkable Values of eligible Coastal Plain rivers. The ORVs of the Hulahula, Jago, Okpilak, Sadlerochit, and Canning Rivers must be protected. The Sadlerochit Spring is the largest spring within the coastal plain and should also be protected. During the winter months, pressurized water discharged from the spring is important	Rivers are designated in the National Wild and Scenic Rivers System as specified in the Wild and Scenic Rivers Act by 1) an act of Congress; or 2) the Secretary of the Interior. The BLM will continue to implement stipulations (e.g., Lease Stipulation 1 in Draft EIS Table 2-2), which protect rivers and streams in the program area. The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
71. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	to fish and wildlife once other waterways are frozen.	The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	—	—	Alaska Department of Natural Resources	94102	10	Wild and Scenic Rivers	There is no mandate in ANILCA that binds together consideration of wilderness and oil and gas leasing and production in the Coastal Plain. Section 1003 of ANILCA only addressed oil and gas leasing and left that decision to Congress. The wilderness recommendation is just one administrative action taken in conjunction with the 2015 Arctic Refuge CCP that conflicts with the Tax Act, which repealed the prohibition in Section 1003 of ANILCA and amended the refuge's purposes in ANILCA Section 303(2)(B) to provide for an oil and gas program that includes leasing, exploration, development, production, and transportation of oil and gas in and from the Coastal Plain. Managing rivers determined eligible and suitable in 2015 to maintain their status as potential wild and scenic rivers is another administrative action taken by the USFWS that conflicts with subsequent direction from Congress in the Tax Act. Further, like the wilderness recommendation, Congress took no action to designate any of the recommended rivers, and rivers determined eligible but not recommended were not submitted to Congress for consideration of any kind. Any administrative action that has the potential to interfere with, frustrate, or outright block the ability of the Secretary to carry out direction in the Tax Act should be eliminated.	Rivers are designated in the National Wild and Scenic Rivers System as specified in the Wild and Scenic Rivers Act by 1) an act of Congress; or 2) the Secretary of the Interior. The BLM will continue to implement stipulations (e.g., Lease Stipulation 1 in Draft EIS Table 2-2), which protect rivers and streams in the program area.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	—	—	Alaska Department of Natural Resources	94102	11	Wild and Scenic Rivers	While the Coastal Plain EIS indicates that the 2015 Arctic Refuge CCP obligates the USFWS to apply these protections, the Wild and Scenic Rivers Act only affords protections for rivers that Congress has identified for review; not agency-directed study rivers, as in this case. In addition, the 2015 Arctic Refuge CCP only applied interim management prescriptions to rivers found suitable and recommended for designation, which in the Coastal Plain applies to the lower portion of the Hulahula River (page I-F-1) and not the Canning, Okpilak and Jago rivers. Guidance issued by the Interagency Wild and Scenic Rivers Coordinating Council supports this management action by directing agencies to suspend any protections applied to eligible rivers once they are found not suitable for recommendation.	Rivers are designated in the National Wild and Scenic Rivers System as specified in the Wild and Scenic Rivers Act by 1) an act of Congress; or 2) the Secretary of the Interior. The BLM will continue to implement stipulations (e.g., Lease Stipulation 1 in Draft EIS Table 2-2), which protect rivers and streams in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	—	—	Alaska Department of Natural Resources	94102	12	Wild and Scenic Rivers	Additionally, many of the overly-restrictive measures applied to both eligible and suitable rivers by the 2015 Arctic Refuge CCP are inconsistent with ANILCA, and should not be included in the EIS. The blanket one-to five-mile NSO setbacks or buffers, far exceed the boundaries, withdrawals, and restrictions that Congress applied to WSRs designated by ANILCA. For example, the boundary for ANILCA designated WSRs is an average of one-half mile on each side of a designated WSR and the mineral withdrawal applied to "wild" river segments extends one-half mile from the bank (not applicable to river segments designated as "scenic" or "recreational"). The State also strongly objected to both Wilderness and WSR reviews conducted in conjunction with the 2015 Arctic Refuge CCP on the basis that they violated several provisions of ANILCA, including Sections 1002, 1317, and 1326(b). The limited authority to conduct wilderness and WSR reviews granted to the USFWS by Congress in ANILCA has long expired and new studies without congressional approved are explicitly prohibited.³ Therefore, it is entirely inappropriate for the EIS to carry forward the results of an outdated and legally flawed WSR review by identifying both rivers found eligible and/or suitable as special WSR designations needing additional protections to ensure their status for future designation, especially considering no congressional action occurred to designate any of these rivers, nor did Congress even have the option to take any action on eligible rivers. Applying blanket NSO designations⁴ to these rivers is also excessive beyond the intent of Congress for management of designated WSRs in Alaska.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	—	—	Alaska Department of Natural Resources	94102	9	Wild and Scenic Rivers	BLM is correct that the Tax Act nullified the Arctic Refuge CCP's wilderness recommendations for the Coastal Plain. The Tax Act also nullified the USFWS' previous planning decision to recommend rivers located in the Coastal Plain in the 2015 Arctic Refuge CCP's Wild and Scenic River (WSR) review. The Draft EIS fails to recognize this nullification. Instead, the Draft EIS recommends overly restrictive prescriptions for these rivers, both eligible (not recommended) and suitable (recommended), to ensure Congress retains the option to designate them in the future.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
76.	—	—	Alaska Department of Natural Resources	94102	12	Wild and Scenic Rivers	Additionally, many of the overly-restrictive measures applied to both eligible and suitable rivers by the 2015 Arctic Refuge CCP are inconsistent with ANILCA, and should not be included in the EIS. The blanket one-to five-mile NSO setbacks or buffers, far exceed the boundaries, withdrawals, and restrictions that Congress applied to WSRs designated by ANILCA. For example, the boundary for ANILCA designated WSRs is an average of one-half mile on each side of a designated WSR and the mineral withdrawal applied to "wild" river segments extends one-half mile from the bank (not applicable to river segments designated as "scenic" or "recreational"). The State also strongly objected to both Wilderness and WSR reviews conducted in conjunction with the 2015 Arctic Refuge CCP on the basis that they violated several provisions of ANILCA, including Sections 1002, 1317, and 1326(b). The limited authority to conduct wilderness and WSR reviews granted to the USFWS by Congress in ANILCA has long expired and new studies without congressional approved are explicitly prohibited.³ Therefore, it is entirely inappropriate for the EIS to carry forward the results of an outdated and legally flawed WSR review by identifying both rivers found eligible and/or suitable as special WSR designations needing additional protections to ensure their status for future designation, especially considering no congressional action occurred to designate any of these rivers, nor did Congress even have the option to take any action on eligible rivers. Applying blanket NSO designations⁴ to these rivers is also excessive beyond the intent of Congress for management of designated WSRs in Alaska.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	—	—	Alaska Department of Natural Resources	94102	14	Wild and Scenic Rivers	DOI must take administrative action to apply the appropriate management category to the Coastal Plain in the 2015 Arctic Refuge CCP that recognizes congressional direction to implement an oil and gas leasing program in the Coastal Plain and rescind the outdated and legally flawed Wilderness and WSR recommendations. Maintaining these administrative designations results in management direction in the Coastal Plain EIS that conflicts with or frustrates direction in the Tax Act and ANILCA and causes confusion with the public about the applicability of these but BLM need not wait until amendment of the Arctic Refuge CCP is complete to change the Draft EIS. The Tax Act nullified contrary recommendations in the Arctic Refuge CCP and the Draft EIS must reflect the Tax Act's requirements. BLM should remove the corresponding eligible and suitable special "WSR" designations and any related protective measures identified in the Draft EIS.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
78.	—	—	Alaska Department of Natural Resources	94102	69	Wild and Scenic Rivers	Page 3-210, Wild and Scenic Rivers, 3rd paragraph Correction This discussion indicates stipulations would only be applied to rivers found suitable and recommended to Congress; however, the EIS applies stipulations to both suitable and eligible rivers; eligible rivers have not been recommended to Congress for designation. As discussed above, we object to applying protections to both suitable and eligible rivers to preserve their status for future designation and request they be removed from the EIS.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

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79.	—	—	Alaska Department of Natural Resources	94102	70	Wild and Scenic Rivers	Page 3-214 and 3-215 Correction For all alternatives, there are no designated WSRs in the Coastal Plain and the WSR review conducted by the USFWS in the 2015 Arctic Refuge CCP is legally flawed and outdated. Remove all references to eligible and suitable rivers and related discussion of impacts to WSRs or river preliminary classifications.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system. The USFWS will be revising their CCP to address the five purposes of the Refuge, as amended by the Tax Act, and their management strategies.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	—	—	Alaska Department of Natural Resources	94102	71	Wild and Scenic Rivers	Page 3-216, first paragraph Correction The WSRA only applies protections to congressionally-directed study rivers. The following statement "Examples are maintaining ORVs or the free-flowing nature of eligible or suitable segments in the program area, in accordance with the Wild and Scenic Rivers Act" implies the WSRA requires these study rivers be protected, which is not the case, as the study was agency-directed, not congressionally-directed.	The BLM's policy goal for eligible and suitable rivers is to manage their free-flowing condition, water quality, tentative classification, and any ORVs to assure that a suitability decision can be made for eligible rivers or, in the case of suitable rivers, until Congress designates the river in the National Wild and Scenic Rivers System or releases it for other uses. The Wild and Scenic Rivers Act mandates protections for rivers that are designated rivers of the National Wild and Scenic River System. Federal managers of rivers that were recommended pursuant to a congressionally authorized WSR study are obligated to use existing management authorities to protect the characteristics of rivers for the conditions under which they were found eligible and suitable. A river's preliminary classification (either wild, scenic, or recreational, based on level of development), free-flowing condition, water quality, and ORVs must be maintained. The WSR study for Arctic Refuge was an agency-directed study, not a congressionally authorized study; however, where practicable and where it does not conflict with the purposes of PL 115-97, stipulations would be applied to protect WSR characteristics on rivers determined to be suitable and recommended to Congress to be included in the system.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	—	—	United States Fish and Wildlife Service	97942	65	Wild and Scenic Rivers	Section 3.4.7, Page 3-214-3-215: We recommend providing additional information on why setback distances are different across alternatives, what the ecological justification for the differences is, and what the relative impact of the different setbacks on the achievement of the stated objectives in Stipulation 1 is.	Setback distances were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.
82.	Brook	Brisson	Trustees for Alaska	98270	127	Wild and Scenic Rivers	The draft EIS fails to protect the Coastal Plain's eligible rivers ORVs. The Wild and Scenic Rivers Act Requires management of eligible rivers to protect and maintain their current values.1823 BLM's cursory analysis provides different suggested buffer zones around high water marks of each river, but does not explain how those buffers protect the specific ORVs for the relevant rivers.1824 Had BLM prepared a visual resources analysis, it would have been apparent that the proposed buffers are wholly insufficient to protect scenery-and recreation-dependent ORVs.1825	Setback distances were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, and recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.
83.	Withheld	Withheld	—	56413	3	Wild and Scenic Rivers	There appears to be no detailed analysis of direct, indirect and cumulative impacts on the eligible wild and scenic rivers identified in the Refuge CCP (Table 3-32) notwithstanding the discussion of recreational resources and potential impacts associated with these and other river corridors earlier in the draft EIS.	See the <i>Direct and Indirect Impacts</i> discussion in Section 3.4.7.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84.	—	—	United States Fish and Wildlife Service	97942	63	Wild and Scenic Rivers	Section 3.4.7, Page 3-210, Wild and Scenic Rivers, Paragraph 4: In order to address interim management guidance for suitable rivers affected by proposed activities (whether the rivers lie inside or outside the project area), we recommend that the first sentence be changed to: "The Marsh Fork-Canning, Hulahula, and Kongakut Rivers are north-flowing waterways found to be...". Change last sentence of paragraph to: The Marsh Fork-Canning (Recreational ORV) and Kongakut (Recreational, Scenic, and Geologic ORVs) Rivers are not within the project area, but stipulations and ROPS would be applied to protect their WSR characteristics (e.g.: the scenic ORV for the Kongakut River may necessitate modeling and additional setbacks within the project area to insure infrastructure is not visible from any point within the Kongakut River corridor; or the sport fishing opportunities described as part of the Marsh Fork-Canning recreational ORV may be preserved by stipulating program actions within the downstream project area) (see Section 5.7.2 of CCP, Appendix I: Wild and Scenic River Review).	Changes have been made to Section 3.4.7 as requested.
85.	—	—	United States Fish and Wildlife Service	97942	64	Wild and Scenic Rivers	Section 3.4.7, Page 3-214, Impacts Common to all Action Alternatives: In order to address interim management guidance for suitable rivers affected by proposed activities (whether the rivers lie inside or outside the project area), we recommend changing the sentence beginning with "General impacts...which could affect cultural, fish, geologic, recreation, and wildlife ORVs." to also include the scenic ORV.	Changes have been made to Section 3.4.7 as requested.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Karina	Marzban	—	18201	1	Wilderness Areas	The EIS must clearly analyze the complete spectrum of oil leasing impacts to the wilderness character of both the coastal plain and designated Wilderness to the south and east.	Impacts on wilderness characteristics in the Coastal Plain are described in the Draft EIS (see Section 3.4.7). Also, Table 2-2, Alternative D, Lease Stipulation 10 proposes protective management actions for the Mollie Beattie Wilderness Area adjacent to the Coastal Plain program area.
87.	John	Lawrence	—	71636	2	Wilderness Areas	The EIS should study how oil and gas will impact Wilderness character and the ability for future generations to experience Wilderness areas and proposed Wilderness in the Refuge.	Impacts on wilderness characteristics in the Coastal Plain are described in the Draft EIS (see Section 3.4.7). Also, Table 2-2, Alternative D, Lease Stipulation 10 proposes protective management actions for the Mollie Beattie Wilderness Area adjacent to the Coastal Plain program area.
88.	Lisa	Baraff	Northern Alaska Environmental Center	74306	11	Wilderness Areas	the BLM fails to account for the wilderness purpose of the Coastal Plain when identifying the area's purposes in the DEIS. Without acknowledging the wilderness purpose, BLM cannot accurately evaluate impacts of an oil and gas program on the wilderness characteristics of the Arctic Refuge and Coastal Plain. The DEIS does state that the four primary qualities of wilderness occur throughout the Coastal Plain, except in certain tracts near Kaktovik. BLM does not clarify what it means by "tracts." BLM needs to more fully and accurately describe the wilderness characteristics in the DEIS, including providing maps illustrating the characteristics under consideration. BLM's analysis of the impacts by alternative is sorely lacking. Recognition that impacts from oil and gas development will be greater for the three action alternatives than the no-action alternative is common sense, not an analysis.	Impacts on wilderness characteristics in the Coastal Plain are described in the Draft EIS (see Section 3.4.7). Also, Table 2-2, Alternative D, Lease Stipulation 10 proposes protective management actions for the Mollie Beattie Wilderness Area adjacent to the Coastal Plain program area. PL 115-97 amended the purposes of the Refuge and requires the establishment of an oil and gas leasing program. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89.	Withheld	Withheld	—	83328	1	Wilderness Areas	The EIS does not adequately identify the loss of wilderness values and the impacts to the larger landscape of this loss. What will be the impacts on adjoining Gates of the Arctic or the eastern side of ANWR as travelers seeking these experiences crowd into the remaining wild lands?	Impacts on wilderness characteristics in the Coastal Plain are described in the Draft EIS (see Section 3.4.7). Also, Table 2-2, Alternative D, Lease Stipulation 10 proposes protective management actions for the Mollie Beattie Wilderness Area adjacent to the Coastal Plain program area.
90.	Brook	Brisson	Trustees for Alaska	98270	123	Wilderness Areas	Absent from BLM's analysis of any alternative is an analysis of the impacts on the adjacent designated Wilderness. Oil and gas activities will have impacts on the Mollie Beattie Wilderness, including sound, light, visual, and natural systems (including but not limited to hydrology, migration, and permafrost). Indeed, the viewshed analysis prepared by Mr. Smith demonstrates that infrastructure of any height located in virtually any location on the Coastal Plain will be visible from high points within the Wilderness, marring the visitor's experience and greatly diminishing his or her sense of being immersed in a natural, undeveloped landscape. ¹⁸¹⁵ BLM must analyze the impacts of its proposed oil and gas program on the designated Wilderness and be sure that any program that it proposes does not degrade the qualities of the Wilderness and its management under ANILCA and the Wilderness Act.	Impacts on wilderness characteristics in the Coastal Plain are described in the Draft EIS (see Section 3.4.7). Also, Table 2-2, Alternative D, Lease Stipulation 10 proposes protective management actions for the Mollie Beattie Wilderness Area adjacent to the Coastal Plain program area. All action alternatives are designed to meet the purpose and need of the action and to account for all purposes of the Refuge.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
91.	Brook	Brisson	Trustees for Alaska	98270	116	Wilderness Areas	Additionally, the area of the Arctic Refuge to the immediate east and south of the Coastal Plain is designated Wilderness: the Mollie Beattie Wilderness Area. The Mollie Beattie Wilderness is "the largest, wildest, and most diverse Wilderness in the National Wildlife Refuge System." It supports a number of uses, such as recreation, subsistence hunting and fishing, and scientific research. BLM fails to describe this area and its values. With respect to the Mollie Beattie Wilderness Area, BLM must ensure that no activities will harm its wilderness characteristics or otherwise run afoul of its management as Wilderness.	The Mollie Beattie Wilderness Area is outside of the program area; however, Table 2-2, Lease Stipulation 10 would further protect naturalness and opportunities for solitude from visual obstructions and noise in the program area and the adjacent Mollie Beattie Wilderness Area.
92.	Brook	Brisson	Trustees for Alaska	98270	118	Wilderness Areas	BLM states that under all alternatives, oil and gas and related activities "could potentially affect an area's naturalness and opportunities for solitude in the program area"1806 or "could be affected." These are profound understatements. Development of the Coastal Plain under all alternatives will have significant impacts on wilderness characteristics and values; BLM cannot downplay these impacts. The 1987 Report found that full or even limited leasing would have major impacts on recreation, wilderness, and esthetics.1807 The agency must thoroughly analyze the impacts of all activities associated with an oil and gas program on the wilderness values, characteristics, and resources of the Coastal Plain, as well as the Mollie Beattie Wilderness. Brief statements of possible impacts are not sufficient.	The Mollie Beattie Wilderness Area is outside of the program area; however, Table 2-2, Lease Stipulation 10 would further protect naturalness and opportunities for solitude from visual obstructions and noise in the program area and the adjacent Mollie Beattie Wilderness Area.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
93.	Brook	Brisson	Trustees for Alaska	98270	119	Wilderness Areas	BLM also incorrectly states that the impacts to wilderness would be site-specific, and it appears to focus only on roads and access routes as impacting wilderness characteristics. This is unreasonable and unsupported. It is also inconsistent with other findings by the agency that oil and gas facilities would have impacts in NSO areas.1808 As the National Research Council (NRC) explained, "[t]he effects of industrial activities are not limited to the footprint of a structure or to its immediate vicinity; a variety of influences can extend some distance from the actual footprint."1809	The Mollie Beattie Wilderness Area is outside of the program area; however, Table 2-2, Lease Stipulation 10 would further protect naturalness and opportunities for solitude from visual obstructions and noise in the program area and the adjacent Mollie Beattie Wilderness Area.
94.	Brook	Brisson	Trustees for Alaska	98270	120	Wilderness Areas	BLM cannot confine its analysis of impacts to wilderness to just the direct areas developed. The agency must describe how all oil and gas activities have the ability to directly and indirectly impact the undeveloped, untrammeled, and natural characteristics and opportunities for solitude or primitive and unconfined recreation of a much broader area and account for that in the EIS.1811	The Mollie Beattie Wilderness Area is outside of the program area; however, Table 2-2, Lease Stipulation 10 would further protect naturalness and opportunities for solitude from visual obstructions and noise in the program area and the adjacent Mollie Beattie Wilderness Area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
95.	Brook	Brisson	Trustees for Alaska	98270	125	Wilderness Areas	BLM also proposes only one protective measure for the Mollie Beattie Wilderness that would apply under only Alternative D: a three-mile NSO buffer and suggestion that aircraft operations be planned to minimize flights below 2,000 feet within that buffer. 1820 Had BLM prepared a visibility analysis, it would have been apparent that the three-mile NSO buffer is wholly insufficient to protect wilderness values in the Mollie Beattie Wilderness under any alternatives and regardless of where development is located - since infrastructure of any height located virtually anywhere on the Coastal Plain will be visible from high points in the adjacent Wilderness: Map Explanation: Visibility surface for 15 points in the Mollie Beattie Wilderness south of the program area and no surface occupancy Wilderness buffer under Alternative D. Visibility surfaces were obtained from Stuart Smith at True North GIS and indicate how tall a structure could be in a given location before becoming visible to a person standing at the 15 points. This map indicates that the Wilderness buffer proposed in the DEIS is vastly inadequate to mitigate visual impacts to recreationalists in the Wilderness. Nearly the entire Coastal Plain is visible at ground level from the 15 Wilderness points, meaning that any oil and gas infrastructure would also be visible, negatively impacting the Wilderness experience.	This proposed action is for a lease action only, which has potential indirect impacts on wilderness characteristics from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require environmental review before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies. If possible, mitigation would also be recommended to reduce naturalness impacts on wilderness characteristics.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
96.	—	—	Alaska Department of Natural Resources	94102	16	Wilderness Areas	The discussion in the Wilderness Characteristics, Qualities and Values section of the EIS (Page 3211) contains several errors or misrepresentations. First, the description of the 1964 Wilderness Act in the EIS is inaccurate. The Wilderness Act does not identify its purpose as “to preserve a representative sample of ecosystems in a natural and wild condition,” nor did it designate a representative sample of ecosystems or include this concept in its criteria for future designation. BLM should remove the words “representative sample of ecosystems” in the Final EIS.	The suggested change has been made to EIS Section 3.4.7.
97.	Francis	Mauer	—	97757	3	Wilderness Areas	In numerous instances we find the DEIS to be exceedingly disingenuous in its description of impacts to Wilderness. For example, on page 3-216 we find the following statement referring to Alternative B: “Wildernes characteristics would be eliminated on a site-specific basis should new roads be authorized;however,the area would likely retain its overall wildernes character.” No further explanation is provided as to how this evaluation was determined. Claiming that roads eliminate wilderness characteristics only “on a site-specific basis” reveals a general bias that downplays the magnitude of potential impacts of leasing and development. Roads are prohibited in Wilderness for a good reason: they are incompatible and destroy the very essence of wilderness character. The effect of a road built in a roadless area, such as the coastal plain, extends far beyond the site-specific area. However, the DEIS is silent on this point. This distorted and false assessment (“the area would likely retain its overall wilderness character”) must be revised to reflect the true impacts of roads on wilderness character within all action alternative areas. Currently the coastal plain has conditions that make it suitable for designation as Wilderness and the U.S. Fish and Wildlife has recommended	Any future on-the-ground actions requiring BLM approval, including seismic exploration, would require further NEPA analysis based on the site-specific proposal.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	that it be designated as Wilderness.[4] The presence of a road on the open tundra landscape of the coastal plain would have a devastating effect on wilderness characteristics over a vast area and greatly impact the enjoyment provided to visitors who come to the Refuge to experience these characteristics. Even portions of Alternative D area where it is proposed that there would be no leasing, there is potential for harm to wilderness characteristics because BLM indicates that seismic exploration may be allowed in no lease areas.[5] Experience has shown from 2 D seismic surveys done during 1984-85, that significant damage to tundra vegetation, soils, hydrology and visual resources occurred. These surveys harmed wilderness characteristics in a manner that over 120 miles of trails remain damaged and visible in 2018. Impacts associated with 3 D techniques will likely be much greater due to the intensive grid (650 feet between lines).[6] The likelihood of impacts to wilderness characteristics from seismic surveys within "no lease" areas is great, and must be assessed in this EIS process. The cumulative impact of seismic surveys within all action alternatives must also be acknowledged, because this alone constitutes a large impact to the wilderness character of the coastal plain and the viewshed extending far into adjacent designated Wilderness lands.	(see above)
98.	—	—	United States Fish and Wildlife Service	97942	171	Wilderness Areas	Page 3-211: The statement about Wilderness recommendation beginning with "In the Arctic Refuge CCP..." should read, "...the USFWS recommended and the President recommended the lands in the program area for wilderness designation."	No change is needed in the Final EIS.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
99.	—	—	United States Fish and Wildlife Service	97942	172	Wilderness Areas	Page 3-216: Recommend changing the first sentence of second paragraph to read " . naturalness, wildness, and symbolic values of an area that may be affected ."	The suggested change has been made to EIS Section 3.4.7.
100.	—	—	United States Fish and Wildlife Service	97942	173	Wilderness Areas	Page 3-216, under Alternative B, line 7: Recommend changing "...would likely retain its overall wilderness character to "... would likely retain some of its overall wilderness character", as the wilderness character would be lost to some degree.	The suggested change has been made to EIS Section 3.4.7.
101.	—	—	United States Fish and Wildlife Service	97942	174	Wilderness Areas	Page 3-216, 3rd full paragraph, last sentence: Recommend changing to read "... and, therefore, would affect an area's ..."	The suggested change has been made to EIS Section 3.4.7.
102.	—	—	United States Fish and Wildlife Service	97942	175	Wilderness Areas	Page 3-216: Recommend changing the 3rd sentence under Alternative A to read, "Current USFWS management focuses on no or minimal manipulation of the environment, wildness, and promoting..."	The suggested change has been made to EIS Section 3.4.7.
103.	Withheld	Withheld	—	56413	1	Wilderness Areas	In the case of recreation there are a number of significant adverse impacts discussed associated with potential oil and gas development. However, in the follow-up for direct and indirect and cumulative impacts, these are only discussed in a cursory manner, and only minimal differences attributed to the several alternatives. Notably, on 3-216 impacts on wilderness under the Alternative B are stated as: "However, the area would likely retain its overall wilderness character"! Considering the extensive proposed actions and the high wilderness values of the Coastal Plain, this appears to be fallacious assertion.	This paragraph in EIS Section 3.4.7 has been revised for clarity.

S.3.40 Subsistence Uses and Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	F	Chapin	—	29337	7	Subsistence Uses and Resources	Over 90% of households in Native communities that use ANWR participate in subsistence (pages 3-162, 3-167, and 3-169) and identify culturally with the animals that they harvest (page 3-164). Research in the Prudhoe Bay region that is not cited in the EIS documents that past oil development has substantially constrained subsistence opportunities. It is therefore virtually certain that the proposed development in the 1002 area will impact the social, health, and cultural environment of these communities (page 3-187). This deep cultural impact of oil development in the region is not adequately considered in the EIS.	The cumulative impacts discussion identifies subsistence impacts that have occurred due to past and present actions (including development in the Prudhoe Bay region).
2.	Withheld	Withheld	—	41048	6	Subsistence Uses and Resources	The draft EIS downplays and understates the catastrophic impact that oil and gas development will have on the way of life of the Gwich'in people who depend on subsistence hunting of the Porcupine caribou herd (3.4.3).	The EIS identifies that impacts to caribou could affect Gwich'in subsistence uses and that, according to the Gwich'in, any development would be devastating.
3.	Malkolm	Boothroyd	—	54092	1	Subsistence Uses and Resources	The DEIS is also severely lacking in its analysis of subsistence impacts. The review fails to acknowledge Gwich'in in Canada when determining what communities could be "appreciably affected" by changes to population patterns in the Porcupine caribou herd (see page E-3). 85% of Porcupine caribou harvest occurs in Canada, and therefore Gwich'in communities in Canada would be seriously impacted by activities detrimental to the health of the Porcupine caribou herd. The DEIS must undertake a thorough analysis of the subsistence impacts on Indigenous communities within Canada, and fully address the cultural, social and economic concerns facing Indigenous communities that have been brought to your agency's attention during the scoping period and this current comment period.	The EIS addresses impacts to 22 Alaskan communities, to include four subsistence study communities, as well as seven Canadian user groups of the PCH. The analysis does not indicate substantial impacts to the abundance or availability of subsistence resources. Therefore, impacts to Canadian communities is expected to be similar to those in Arctic Village and Venetie.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Robert	Burgess	—	55298	3	Subsistence Uses and Resources	The DEIS conclusions that subsistence resources for these people will not be harmed directly contradicts its admission that the Porcupine Caribou Herd will be affected by development of the plain.	The EIS identifies multiple potential impacts to subsistence resources and does not conclude that subsistence resources will not be harmed directly.
5.	Withheld	Withheld	Denver Audubon	57090	11	Subsistence Uses and Resources	We could not find a clear, thoughtful discussion of the impacts of oil and gas development on the subsistence uses and needs of villages such as Arctic Village and Venetie, whose residents depend on hunting of the Porcupine Caribou Herd (PCH) during its migration from calving grounds on the Coastal Plain to wintering areas outside of the Arctic Refuge. The EIS mentions several times that the PCH is unhabituated to development, unlike the Central Arctic Herd; more severe impacts to the PCH could be expected, with resulting population changes, most likely declines in reproduction and survival rates.	The comment is not specific to what is lacking in the EIS. Subsistence impacts to Arctic Village and Venetie are addressed and biological conclusions regarding impacts on the PCH are incorporated into the subsistence section.
6.	Jill	Nicholas	—	58402	2	Subsistence Uses and Resources	Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which would have significant ramifications over a vast area of Alaska and Canada, and these effects would persist beyond the estimated 130 years of exploitation. The DEIS fails to address this reality and its effects on indigenous people.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and the potential for impacts to calf survival and herd productivity.
7.	Withheld	Withheld	—	59376	13	Subsistence Uses and Resources	If you are doing an EIS, then data collection is part of the deal (unless cost is exorbitant), so why did BLM not conduct household survey of Arctic Village to ensure analysis of effects to subsistence resources based on accurate data?	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	—	67262	1	Subsistence Uses and Resources	Your plan fails to address the fact that oil exploration will likely drive away the Porcupine caribou herd from it's most desirable calving grounds and will deprive the Gwich'in of 80% of their food supply.	The comment is not specific to what is lacking in the EIS. Subsistence impacts to Arctic Village and Venetie are addressed and biological conclusions regarding impacts on the PCH, including potential impacts on calf survival and herd productivity, are incorporated into the subsistence section.
9.	Withheld	Withheld	—	67675	1	Subsistence Uses and Resources	on one hand, your draft claims that oil and gas development in the caribou calving grounds will have no impact on the Gwich'in tribe's subsistence hunting practices, on the other hand you acknowledge that oil and gas development could change migration patterns and lower calving rates.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and Gwich'in subsistence uses of caribou. The section does not conclude that oil and gas development will have no impact on Gwich'in hunting practices.
10.	Peter	Stern	—	69296	41	Subsistence Uses and Resources	Page 3-165 The harvest data for Arctic Village is virtually non existent. The text says the PCH are important to the village but claims there is no recent harvest data on which to display use. I serious doubt good data doesn't exist. This section seems to white wash the importance of the PCH animals to residents of arctic village. There is no mention of the importance of the sharing network except as referenced in the section relating to venetie.	The EIS presents the known, available, and comparative harvest information for Arctic Village. Additional qualitative data on Arctic Village subsistence uses and sharing networks have been incorporated.
11.	Peter	Stern	—	69296	42	Subsistence Uses and Resources	Page 3-166 harvest data for Venetie is only slightly better than Arctic Village but still extremely suspect as only 1 year is referenced. I suspect the large mammal harvest data is seriously under reported. Large Marine mammals used by a village in interior Alaska (Table 3-30). This data is very suspect.	The EIS presents the known, available, and comparative harvest information for Venetie.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Peter	Stern	—	69296	43	Subsistence Uses and Resources	Page 3-167 the poor quality of harvest data seems to be evident throughout the study area. The document indicates the importance of caribou to the listed communities but offers no suggestions of how to get better data on which to make decisions.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
13.	Peter	Stern	—	69296	45	Subsistence Uses and Resources	Page 3-167-168 The harvest data is at least 25 years old. Not a very good basis for many decisions. Shows how poorly understood the subsistence importance of the PCH has been tracked and studied.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
14.	Peter	Stern	—	69296	46	Subsistence Uses and Resources	Page 3-169 "Among Alaskan communities, Kaktovik, Venetie, and Eagle are in GMU sub-units overlapping the PCH herd and have a high reliance on caribou; " Arctic Village isn't listed due to GMU data issues? This is poorly written and incomplete.	Arctic Village is not listed in the sentence because it doesn't have comparable data to make a statement similar to that of Kaktovik, Venetie, and Eagle. Following sentence in Draft EIS identifies Arctic Village would be most likely to experience impacts as follows: "In addition, Arctic Village, although lacking harvest data, would also be most likely to experience impacts due to their proximity and reported reliance on the PCH."

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Peter	Stern	—	69296	47	Subsistence Uses and Resources	Page 3-170 This section explains possible issues with subsistence hunting caused by development which causes the animals to move to other areas to avoid conflicts. This is a stressor on the herd which can affect the herd size, herd condition, timing of herd movement all of which may affect other subsistence users of the PCH but this is not discussed.	The Draft EIS addresses the commenter's concern on Page 3-170 as follows: "If development causes large-scale displacement from PCH calving grounds, then the herd could experience a decline in calf survival and stagnant herd growth."
16.	Peter	Stern	—	69296	48	Subsistence Uses and Resources	Page 3-171 "While potential impacts on resource availability related to noise and traffic are most likely to be local in extent, such as for Kaktovik or Nuiqsut residents who use the program area, more widespread changes in migration or abundance resulting from noise and traffic and infrastructure (see discussion below) could cause regional impacts extending outside the program area to other communities, such as the Gwich'in peoples communities of Arctic Village and Venetie and the Gwich'in and Inuvialuit user groups in Canada. Residents of these communities harvest from the PCH and CAH (see Table M-20 in Appendix M). In addition, reduced harvests by Kaktovik residents could disrupt existing sharing networks to other communities and regions if residents are unable to share as widely or frequently as they are accustomed to. " So there really are possible effects of PCH that will affect subsistence used outside the localized area.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Peter	Stern	—	69296	50	Subsistence Uses and Resources	Page 3-174 the impact of contamination or pollution on PCH animals that would affect subsistence uses in Arctic Village, Venetie and other communities is identified but little else is said.	The EIS includes a section detailing potential impacts related to contamination of subsistence resources. Level of specificity for this would be determined at the project level authorizations. Site-specific analysis, including impacts associated with oil and gas activities, can more realistically be provided when the BLM receives an application to permit such activities with specific project proposals and locations. The Leasing EIS makes no decisions on such activities, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
18.	Peter	Stern	—	69296	81	Subsistence Uses and Resources	Page M-15 the caribou harvest data for nuqsut needs to be definitely qualified as mostly CAH harvest. Not relevant to PCH harvest.	A note was added to the table indicating a majority of harvests come from the TH & CAH.
19.	Peter	Stern	—	69296	82	Subsistence Uses and Resources	Page M-20 the harvest data is based on VERY VERY few years and is horribly incomplete. Page M-23 24 harvest data for Venetie is based on few years, mostly not recent. Marine mammal for an interior village? Page M-25 M-5 harvest data for affected villages again suffer from a lack of current data.	The EIS presents the known, available, and comparative harvest information for Venetie.
20.	Linda	Serret	—	69357	10	Subsistence Uses and Resources	Consider whether: their customs and traditions are at a risk of loss; they would be affected to a different extent than other Alaska Natives; Gwich' in would be able to continue living off of the land or would they be placed into financial hardship by greater reliance on store bought food. What is the significance of the assumed 19% reliance of Arctic Village on subsistence resources if it is lost?	The EIS addresses affects to culture, financial impacts, and the Gwich'in. The EIS does not identify that potential impacts would prohibit Gwich'in from living off the land.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	Withheld	Withheld	—	69634	2	Subsistence Uses and Resources	The DEIS also fails to fully assess the significant impacts of oil leasing and development on caribou, especially during critical times of calving and raising young. Oil leasing and development on the Coastal Plain would diminish caribou populations, with significant impacts over a vast reach of Alaska and Canada, affecting ecosystems and harming indigenous people.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou; biological conclusions regarding impacts on the PCH, and potential impacts on calf survival and herd productivity, are incorporated into the subsistence section.
22.	Withheld	Withheld	—	70934	39	Subsistence Uses and Resources	Page 3 - 177 in regard to assumptions about improving financial situations, It is unclear to me why there is an assumption of increased income. Just because ASRC or KIC has increased revenue does not necessarily mean an individual in Kaktovik will have higher income. Young people and those born in Canada are not shareholders in ANCSA corporations and may receive no financial benefits.	:Increased income related to corporation dividends would likely occur as it has for Nuiqsut; in addition, some individuals will likely obtain employment related to development of the program area. Text was added clarifying that not all residents will experience benefits related to income and employment.
23.	Aidan	Castle	—	71631	2	Subsistence Uses and Resources	In not substantiating the comparison of the PCH to the CAH, the current Draft EIS also, by extension, fails to account for the potential damage to the subsistence practice of the Gwich'in people residing in the Coastal Plain area. The Gwich'in have been residing in this area for 20,000 years. Caribou from the PCH are an irreplaceable food source, as well as a cultural base. A failure to demonstrate that the CAH and PCH are genuinely equivalent is a failure to account for the true impact of Coastal Plain oil and gas extraction on the Gwich'in. The inadequacies of the current Draft EIS thereby present a human rights issue	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and differences between effects to PCH and CAH caribou. The EIS also acknowledges potential impacts to the Gwich'in people resulting from impacts to the PCH.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	5	Subsistence Uses and Resources	Native Alaskan Tribes have been fighting development of the Coastal Plain for 30 years. Tribal concerns must be central to the final EIS, particularly because ANILCA requires that the Reserve “provide the opportunity for continued subsistence uses by local residents.” The Coastal Plain is the calving ground of the Porcupine Caribou Herd, which is at the root of Gwich’in and Iñupiaq subsistence and culture. Gwich’in and Iñupiaq people need the Porcupine Caribou herd as a matter of subsistence and survival. The EIS must assess impacts to these cultures and subsistence economies. This assessment can only be made through extensive conversation with the Gwich’in and Iñupiaq and comprehensive engagement with these tribes as equal partners is needed in the drafting of the EIS. The Tribes have authority as legal entities and as residents of the region for millennia; official and comprehensive consultation with all native villages and tribal leaders must be central in the creation of the final EIS. It is unacceptable that the EIS process move forward without first releasing the NOI and DEIS in the languages of the Gwich’in and Iñupiaq with sufficient respective periods to comment. While the DEIS acknowledges that oil and gas can have impacts on caribou, it defies logic by then concluding that there will not be an impact on the subsistence resources for the Gwich’in.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich’in and does not conclude that there will not be an impact on subsistence resources for the Gwich’in. Based on the Draft EIS’s analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. The BLM has consulted with and continues to consult with potentially affected communities as a result of the Coastal Plain oil and gas leasing program through government-to-government consultation and the Section 106 consultation process.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Withheld	Withheld	—	72234	1	Subsistence Uses and Resources	The Gwich'in people of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving and post-calving habitat. It is vital to their human rights and food security. You must listen to the concerns of the Alaskans who depend upon these natural resources and provide a translator for those who do not speak English. The DEIS most restrictive alternative only halts "major construction activities"—but not drilling—for a single month of the year when caribou are calving. USFWS biologist mention in the leaked PEER memo that data gaps on the Porcupine herd include: "Estimated rates of survival and recruitment are not sufficiently precise to detect biologically significant differences among years" and there is a "Lack of understanding of what drives the variation in calving site selection by caribou" and "Data are needed to assess effectiveness of existing measures used to mitigate effects of disturbance on caribou and to develop more cost-effective measures".	Using BLM funds provided through the Bureau of Indian Affairs, the Arctic Village Council translated and distributed key sections of the EIS into the Gwich'in language. The key sections were: Executive Summary; Chapter 2: Alternatives; Chapter 3: Cultural Resources, Subsistence Uses and Resources; and Appendix E: ANILCA Section 810 Preliminary Analysis. In addition, translators were available in Arctic Village, Venetie, Kaktovik, and Utqiagvik for public testimony. Level of specificity for this would be determined at the project level authorizations. Site-specific analysis, including impacts associated with oil and gas activities, can more realistically be provided when the BLM receives an application to permit such activities with specific project proposals and locations. The Leasing EIS makes no decisions on such activities, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Additional mitigation measures specific to site specific proposal would be required during site specific NEPA analysis. In addition, exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances and ensure effectiveness of mitigation measures. The BLM or operators can initiate adaptive management modifications. See Instruction

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
26.	Ruth	Wood	—	73662	6	Subsistence Uses and Resources	The Coastal Plain is sacred to the Gwich'in people. They consider it the place where life begins, but it is also the place that sustains life for the Gwich'in. BLM acknowledges that oil and gas will impact the caribou, but incorrectly concludes that there will not be an impact on the subsistence resources for the Gwich'in. That oil & gas development in the Coastal Plain will most definitely impact subsistence resources is readily apparent when one reads the Draft EIS, so it is unclear how BLM can come to the conclusion that subsistence resources will not be impacted. The only explanation is that BLM makes this conclusion because otherwise, they would have to provide for the required ANILCA 810 hearing	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Matthew	Rexford	Native Village of Kaktovik	74308	11	Subsistence Uses and Resources	Pg. 3-173 The DEIS states "Future development in the areas of high, medium, and low oil and gas potential could present obstacles to caribou migrating from inland areas to the coast, where many Kaktovik residents hunt them." We have shared that we have difficulty hunting caribou in and around Kaktovik as we do not have access into the refuge in the summer time with motorized vehicles and because the caribou rarely, if ever, migrate to our village. We are only able to harvest caribou by traveling up the river corridors by boat. Mostly, caribou, even after calving, remain in the foothills of the Brooks Range and do not venture to the coast. We are concerned with the apparent absence of Traditional Knowledge in the DEIS.	The BLM reviewed the literature and was unable to identify documentation or TK related to boat travel along river corridors by Kaktovik residents for caribou hunting. This may be a newer hunting pattern. Text was added to acknowledge recent difficulties in hunting caribou along the coast as noted by the commenter.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Matthew	Rexford	Native Village of Kaktovik	74308	12	Subsistence Uses and Resources	Pg. 3-177 The DEIS states "In addition, the increased existence of road corridors in traditional use areas could shift how residents access subsistence harvesting areas, such as via roads, but could also affect resource availability for those who choose not to use roads." In the current management scenario for the non-private lands in ANWR, the Kaktovikmiut do not have any access into the Refuge. While this statement may be true in other areas in Alaska, those documentations are based on a different management schematic where residents are not limited in their access. Kaktovik has long urged for road access to Kaktovik and through the 1002 area in part to increase our access to our traditional hunting areas. Furthermore, in communities with road access, such as Nuiqsut, more overland hunting is occurring as subsistence users have a greater degree of access to other subsistence areas. This statement should be corrected or deleted. The Porcupine Caribou Management Board, an advisory board established under the Porcupine Caribou Management Agreement to communicate information about the herd and provide recommendations to agencies responsible for managing the herd, states on their website⁸ "The Dempster Highway connects Inuvik, NWT to Dawson City, Yukon. The 670-kilometre road runs through the Porcupine Caribou herd's winter range. The 7 Congressional Record - Senate, March 8, 2000 pg. 2242 8 http://www.pcmb.ca/habitat 9 road provides hunters with easy access to caribou, which means that caribou can be harvested when they are close to the highway."	The EIS acknowledges that use of roads have been documented in other communities and cites Nuiqsut subsistence monitoring reports; however, these reports also document hunter avoidance of roads and reports of decreased caribou availability resulting from roads. The EIS lists the various potential benefits of road access, in addition to the potential impacts, all of which have been documented in other communities. Text was added to clarify that the situation in Kaktovik is unique as it pertains to access.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
29.	Allen E.	Smith	—	74324	15	Subsistence Uses and Resources	the DEIS fails to adequately analyze and consider the negative impacts of oil and gas leasing on the subsistence culture and local food sources of the Gwich'in and disregarded their traditional knowledge and concerns.	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
30.	Rosa	Brown	Vuntut Gwitchin Government	74326	4	Subsistence Uses and Resources	Only 1 map depicts Old Crow, "Subsistence Study Communities" (Map 3-27). While Old Crow is denoted as a "Caribou study community" the draft EIS contains no corresponding "Caribou study." The map contains major errors, for example, the depiction of the ranges of the Central Arctic and Porcupine caribou herds. The map does not clearly differentiate the 15 Gwich'in communities, nor does it distinguish the communities' reliance by herd, nor describe such baseline conditions in the draft EIS text. * While the subsistence section mentions "approximately 85% of the Porcupine Caribou herd harvest occurs in Canada," and "the NWT Gwich'in people, Vuntut Gwich'in people, and Inuvialuit are the primary Canadian users in terms of number harvested," (draft EIS p. 3-169), the draft EIS fails to address how oil and gas exploration and development may impact the energetics and resiliency of the Porcupine caribou herd and its availability to the Vuntut Gwich'in over the next 85- 130 years, such as impacts to the size of the herd, migration routes, climate change etc.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
31.	Rosa	Brown	Vuntut Gwitchin Government	74326	19	Subsistence Uses and Resources	Other deficiencies in the assessment of impacts to subsistence harvest include: * The draft EIS does not distinguish communities reliant on the Porcupine caribou herd from those harvesting the Central Arctic herd. While communities that use each herd are listed in the ANILCA Sec. 810 Preliminary Evaluation (DEIS e-3), the specific knowledge and practices are not described. * The sum total of data for Canadian harvesters is minimum at best. * There is no discussion of harvests of other species including migratory birds and fish that tie Vuntut Gwich'in to the Coastal Plain. * There is no discussion of role of Vuntut Gwich'in active management of the herd, in either a traditional or contemporary, co-management context.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
32.	Rosa	Brown	Vuntut Gwitchin Government	74326	19	Subsistence Uses and Resources	The Bureau of Land Management failed to determine impacts to Vuntut Gwitchin First Nation subsistence harvest. This is problematic because the Vuntut Gwitchin First Nation is a primary user group of the Porcupine caribou herd, caribou is a significant portion of the Vuntut Gwich'in diet, and the preferred harvest species.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
33.	Matthew	Rexford	Kaktovik Inupiat Corporation	74331	7	Subsistence Uses and Resources	7. Refine the analysis of Subsistence and Subsistence Resources Subsistence is of utmost important to the KIC for our shareholders are the subsistence hunters who stand to be impacted. Subsistence resources like the Porcupine Caribou Herd, along with other animals like the polar bear are deeply significant to the Kaktovikmiut. Mitigation measures must be included to safeguard our subsistence way of life and our subsistence resources. However, we do not feel that it is one or the other, and as we have seen across the North Slope how development can be designed with subsistence in mind. It is with this in mind that we are active participants in BLM's process, future leasing, and expect to collaborate with future operators. KIC recommends BLM revise their analysis as follows: * Revise	Information regarding the PCH and Dempster highway has been incorporated into the subsistence chapter.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
33. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	maps of the Porcupine Caribou Herd calving to show calving on an annual basis and include the entire calving region of the Porcupine caribou herd in both Canada and Alaska. This will more accurately depict how we in Kaktovik understand how the caribou use the Program Area. The map used in the FWS CCP is a good format to better demonstrate calving. * Assess impacts from eco-tourists on both caribou and polar bears. There is growing concern that eco-tourists may disrupt the Porcupine caribou herd by flying into the area east of the Program Area to witness the migration, which may deflect leading caribou. Tourists also travel to Kaktovik to view polar bears near Kaktovik. These disruptions need to be documented and considered by BLM. * Polar bears frequent the area around Kaktovik, but BLM may have overstated their use of the Program Area. BLM's reference to a phone call of 19 potential maternal dens in a singular season is inconsistent with Traditional Knowledge and is not an appropriate reference. Further, BLM should note that many polar bear are attracted to the bone pile at Kaktovik. Kaktovik whaling captains have decided to eliminate the bone pile in hopes of reducing the concentration of polar bears in and around the community. BLM should note that the removal of the bone pile may reduce the polar bears interest in the Program Area. * Include data from developed areas across the North Slope and Canada on the resilience of both caribou and polar bear to infrastructure. KIC is aware that on their migration to calve, the Porcupine Caribou Herd cross the Dempster Highway in Canada, and the polar bear in our region also range throughout industrial areas across the North Slope. BLM should acknowledge that these animals may already have some resiliency to infrastructure.	(see above)

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Eric	Walsh	Government of Canada	74346	11	Subsistence Uses and Resources	impacts to Canadian users of the PCH are described on pages 3-167 to 3-170 of the dEIS. The dEIS acknowledges that "Canadian users accounted for 85 percent of the harvest, and Alaska users were 15 percent of the harvest" (p. 3-168) and that "...these Canadian communities would be among the most likely to experience potential indirect impacts due to their proximity to and reliance on the PCH." (p. 3-170). Figure 3-7, Map 3-27 and Table M-21 in the dEIS appear to be the sum of information that the analysis of potential impacts to Canadians are based on. This cursory examination does not provide thorough consideration and analysis of impacts to Canadian subsistence users. It is not clear why Canadian subsistence users, for all shared species under our bilateral agreements, are not fully considered in sections 3.4.2, 3.4.4, and 3.4.5.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials
35.	Eric	Walsh	Government of Canada	74346	13	Subsistence Uses and Resources	did not find any analysis in the dEIS of subsistence user impact from potential impacts of the action alternatives to Polar Bear.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials
36.	Eric	Walsh	Government of Canada	74346	25	Subsistence Uses and Resources	The draft EIS largely underestimates the significance of development to Canadian subsistence users.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Eric	Walsh	Government of Canada	74346	38	Subsistence Uses and Resources	Findings for all Alternatives reported no significant restriction to subsistence uses with the exception of Kaktovik due to the potential decrease in access to fish, marine mammals and PCH caribou. However, Table E-3 indicates a major cumulative impact on the physical limitation on access for caribou and moderate impacts to abundance and availability of caribou (Table E-2). Harvest and sharing patterns of 22 Alaskan communities and 7 Canadian user groups are relevant if post-lease oil and gas activities change caribou resource availability or abundance for those users. A significant impact to subsistence resources is defined by BLM (2011) by large reductions in resource abundance, major redistribution of resources, extensive interference with access, or major increases in use by non-subsistence users (pg. E-1). The interaction of the thresholds in Table E-2 and E-3 and the Section 810 evaluation are unclear. The evaluation also assumes that all impacts are mitigated by lease stipulations and ROP's.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Eric	Walsh	Government of Canada	74346	40	Subsistence Uses and Resources	The dEIS states "PCH caribou abundance may be affected due to minor displacement of maternal caribou but large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely (E.2.2.4 Findings)" No references, tables, figures to support this statement is provided. Definitions of a key terms are also not provided as to what constitutes a "large-scale displacement" or "large decrease". No analysis of transboundary effects of Canadian subsistence hunters/communities is included in Section E.2 although Canadian users are discussed in other sections as major harvesters of the PCH (85%) and will most likely to experience potential indirect impacts due to their proximity and reliance on the PCH.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.
39.	Christina	Tippin	City of Point Hope	75230	4	Subsistence Uses and Resources	Elsewhere on the North Slope, data has shown that in communities that have road access, more overland hunting is occurring as subsistence hunters have greater access to subsistence areas which seems obvious, but the DEIS includes narrative that subsistence hunters who use industry infrastructure will impact subsistence users who choose not to. This also ignores the reality of the management framework in place in the Coastal Plain, which restricts local access into the Refuge.	The EIS acknowledges that use of roads have been documented in other communities and cites Nuiqsut subsistence monitoring reports; however, these reports also document hunter avoidance of roads and reports of decreased caribou availability resulting from roads. The EIS lists the various potential benefits of road access, in addition to the potential impacts, all of which have been documented in other communities. Text has been added to clarify that the situation in Kaktovik as it pertains to access is unique.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Christina	Tippin	City of Point Hope	75230	12	Subsistence Uses and Resources	Since the expansion of ANWR with Alaska National Interest Lands Conservation Act (ANILCA), which occurred with no consultation or input from local people, Kaktovik has been confined to the 92,000 acres of privately held land directly around their village. They are only able to travel into the Coastal Plain up river corridors in the summer and are prohibited from using All-Terrain Vehicles in the 1002 Area and the greater Refuge. These layers of restrictions must be peeled back to find solutions on ways the Kaktovikmiut - who should have a greater degree of access in the Coastal Plain than any other stakeholder, industry, or agency - can access their allotments, campsites, traditional use areas, and cultural and subsistence sites.	USFWS is the surface manager of the Coastal Plain of the Refuge, and manages access for <u>non-oil and gas activities</u> . Where it pertains to a potential lease, and implementation of the oil and gas leasing program, all action alternatives include lease stipulations and ROPs that are specific to maintaining access, and developing subsistence access plans where applicable as a result of a lease agreement.
41.	Andrew	Ogden	—	75704	5	Subsistence Uses and Resources	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA. which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine Caribou Herd, which the BLM's own analysis finds leasing will affect, they then find that Gwich'in subsistence use will not be affected. This ignores the traditional knowledge and human rights of the Gwich'in.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Chandra	Turner	Inuvialuit Game Council	75902	1	Subsistence Uses and Resources	The DEIS does not include a single Canadian Indigenous community as a primary subsistence study community or offer equivalent in-depth assessment of the effects of post lease activities on any such community even though the report acknowledges (at 3-167) that “the NWT Gwich’in people, the Vuntut Gwich’in people, and the Inuvialuit (sic) are the primary users [85%] of the PCH in terms of number of caribou harvested”⁶ and furthermore that harvesters from relevant communities⁷ might be affected (at 3-167) if “post-lease oil and gas activities changes caribou resource availability or abundance for those users.” The DEIS also acknowledges that those communities (at 3-169) “with a greater reliance on caribou would be more likely to experience potential indirect impacts related to caribou abundance or availability.” The report concludes with respect to communities reliant on the PCH that Kaktovik, Ventie and Arctic Village (although lacking harvest data) would be the most likely Alaskan communities to experience impacts. However, this would be even more so the case (as the report acknowledges) for some Canadian Indigenous communities (3-169): Compared with these three Alaskan communities, uses of PCH caribou (in terms of number harvested) by the NWT Gwich’in people, Vuntut Gwich’in people, and Inuvialuit user groups are comparable or higher, and communities associated with these user groups-Old Crow, Aklavik, and Fort McPherson-are in the PCH range (Map 3-27 in Appendix A); thus, these Canadian communities would be among the most likely to experience potential indirect impacts due to their proximity to and reliance on the PCH.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Chandra	Turner	Inuvialuit Game Council	75902	7	Subsistence Uses and Resources	We submit that the claim that "Canadian uses of the PCH are addressed under the section below, Subsistence Uses of the CAH and PCH" is simply not justified by the cursory treatment of "Canadian uses of the PCH" in that section. That section identifies that Canadian Indigenous people take 85% of the harvest but fails to follow through with an assessment of the cultural, social and economic importance of this very significant harvest for Inuvialuit and other Canadian Indigenous communities. Sections 3.4.4 and 3.4.5 similarly fall short of adequate consideration of these potential impacts by failing to mention Canadian users of the PCH at all.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
44.	Chandra	Turner	Inuvialuit Game Council	75902	14	Subsistence Uses and Resources	We have also reviewed, as noted above, the sections of the DEIS dealing with Subsistence Use and Resources (3.3.3), Sociocultural Systems (3.4.4) and Environmental Justice (3.4.5). There is no discussion of polar bears as a subsistence resource for either Alaskan communities or Canadian Indigenous communities notwithstanding the fact that the Inuvialuit-Inupiat Agreement acknowledges that the continued availability of bears "is essential to maintain the dietary, cultural, and economic base" of both communities. Neither is there any discussion of any Inuvialuit traditional knowledge of polar bears, such as the Joint Secretariat 2015 book Inuvialuit and Nanuq: A polar bear traditional knowledge study.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
45.	Chandra	Turner	Inuvialuit Game Council	75902	37	Subsistence Uses and Resources	The Inuvialuit-Inupiat polar bear agreement states that "(d) The settlements and their outpost camps whose hunting practices may be affected by this Agreement are Barrow, Nuiqsut, Wainwright, Atkasuk and Kaktovik in the United States and Inuvik, Aklavik, Tuktoyuktuk and Paulatuk in Canada." The impacts to Inuvialuit subsistence use of polar bears from the proposed project activities are not considered in the DEIS. This is an omission.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Chandra	Turner	Inuvialuit Game Council	75904	3	Subsistence Uses and Resources	Such a conclusion should have prompted DEIS drafters to give much greater consideration to the effects on, at the very least, these three Canadian communities, with a similar level of rigour as was extended to Kaktovik, Nuiqsut, Arctic Village, and Venetie. But the report falls far short of that kind of assessment. Instead, the DEIS includes more cursory references to the impacts of post-leasing activities on Canadian Indigenous communities, occasionally acknowledging that they may be severe. For example, the section on “general development and culture” concludes that (at 3-178):	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
47.	Chandra	Turner	Inuvialuit Game Council	75904	4	Subsistence Uses and Resources	In sum, the DEIS offers a qualitatively inadequate analysis of the effect of post-leasing activities on Canadian Indigenous communities although acknowledging that at least some of these communities may be more seriously affected than Alaskan communities. As a result, it is impossible to draw informed conclusions in regards to the impact of these activities on Canadian Indigenous communities, specifically Inuvialuit communities, that depend upon the Porcupine Caribou Herd (PCH) as well as other transboundary resources for subsistence harvest and the dependent social, economic, and cultural continuity.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Chandra	Turner	Inuvialuit Game Council	75904	10	Subsistence Uses and Resources	The only direct reference to the PCH Agreement that we have found in the DEIS is in section 3.4.3 dealing with Subsistence Uses and Resources which contains the acknowledgement that (at 3-160): According to the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, "when evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, including cumulative impacts, to the Porcupine Caribou Herd, its habitat and affected users of Porcupine Caribou" (Section 3(g)). Canadian uses of the PCH are addressed under the section below, Subsistence Uses of the CAH and PCH. We submit that the claim that "Canadian uses of the PCH are addressed under the section below, Subsistence Uses of the CAH and PCH" is simply not justified by the cursory treatment of "Canadian uses of the PCH" in that section. That section identifies that Canadian Indigenous people take 85% of the harvest but fails to follow through with an assessment of the cultural, social and economic importance of this very significant harvest for Inuvialuit and other Canadian Indigenous communities. Sections 3.4.4 and 3.4.5 similarly fall short of adequate consideration of these potential impacts by failing to mention Canadian users of the PCH at all.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
49.	Chandra	Turner	Inuvialuit Game Council	75904	11	Subsistence Uses and Resources	[PCH Agreement 1987] In sum, we do not accept that this DEIS serves (Article 3(b)) to “ensure that the Porcupine Caribou Herd, its habitat and the interests of users of Porcupine Caribou are given effective consideration in evaluating proposed activities within the range of the Herd.” Further action is required to discharge this obligation. Once that obligation is discharged it will be possible to assess the significance of the impact on the PCH and its habitat (Article3(d)).	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
50.	Chandra	Turner	Inuvialuit Game Council	75904	13	Subsistence Uses and Resources	Finally, we note that Article 3(g) requires that the Parties, in evaluating the environmental consequences of a proposed activity, must “consider and analyze potential impacts, including cumulative impacts, to the Porcupine Caribou Herd, its habitat and affected users of Porcupine Caribou ...”. In order to carry out a cumulative impact assessment of affected users of the PCH it is necessary to define those affected users and assess on a community-by-community basis the cumulative impact of the projected post-leasing activities. The DEIS does not do this. The cumulative effects subsections in the DEIS provide, at best, a brief summary of some possible and discrete impacts, not any analysis of synergistic and accumulative effects of these impacts combined, which is the standard for cumulative effects analyses (NRC 2003). The overall treatment of cumulative effects in the DEIS is grossly inadequate and does not discharge the obligation imposed by Article 3(g).	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
51.	Chandra	Turner	Inuvialuit Game Council	75904	17	Subsistence Uses and Resources	Regarding the section of the DEIS dealing with polar bears (3-123 - 3-129), we note that while the Iñupiat-Inuvialuit Agreement on the Southern Beaufort Sea population is referenced, there is no further mention of Inuvialuit harvesting of polar bears or the cultural significance of polar bears and no reference to the Agreement on the Conservation of Polar Bears or to the Circumpolar Action Plan.	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
52.	Chandra	Turner	Inuvialuit Game Council	75904	26	Subsistence Uses and Resources	Despite multiple assertions that the EIS reviewed scoping submission comments, references to Inuvialuit subsistence, sociocultural, and historic use of the North Slope are cursory at best. The list of sources consulted in Section 3.4.2 (3-151) does not include any Inuvialuit sources as referred to in the scoping submission. The list of relevant regulations for evaluating the effects on cultural resources (3-151) does not include any relevant international agreements or treaties (see Part 4, above)	The EIS has been revised to more fully analyze transboundary impacts, were applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
53.	Chandra	Turner	Inuvialuit Game Council	75904	28	Subsistence Uses and Resources	The DEIS states that 85% of PCH harvest takes place in Canada (3-167), but the impact on Canadian subsistence is not addressed to the same level as for the Alaskan communities. No analysis was undertaken on the impact to other important subsistence populations, such as the Southern Beaufort Sea polar bear population. We have addressed these deficiencies in more detail in Part 2, above.	The EIS has been revised to more fully analyze transboundary impacts, were applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
54.	Chandra	Turner	Inuvialuit Game Council	75904	29	Subsistence Uses and Resources	Subsistence is a complex economic, social, cultural, and spiritual system which interacts with traditional knowledge and the contemporary health of modern northern communities. It cannot, by definition, be treated in isolation. Impacts to Canadian subsistence are omitted from the DEIS Sections: Cultural Resources (3.4.2), Sociocultural Systems (3.4.4), Environmental Justice (3.4.5), Economy (3.4.10), Public Health (3.4.11), or Unavoidable Adverse Effects (3.5). Its absence in these sections is a major omission.	The EIS has been revised to more fully analyze transboundary impacts, were applicable.
55.	Chandra	Turner	Inuvialuit Game Council	75904	30	Subsistence Uses and Resources	Several mechanisms exist to assess the importance of subsistence harvest to food security, and the potential impacts of the development on food security, in terms of meat and replacement income. Food security also includes complex socioeconomic sharing relationships within and between communities on both sides of the border. We have included several references below on these considerations. Analysis of impacts to Inuvialuit food security is absent from the DEIS.	The EIS has been revised to more fully analyze transboundary impacts, were applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
56.	Chandra	Turner	Inuvialuit Game Council	75904	31	Subsistence Uses and Resources	The DEIS states that "development could potentially affect subsistence uses of resources of major importance" (3-197). Impacts to subsistence resources are unquestionably economic, with wide social consequences. However, economic impacts on Inuvialuit communities were omitted from the DEIS. As the DEIS states, distant user communities will not experience any economic benefits if development proceeds (3-178) but they will face economic consequences due to disruption of subsistence resource availability and the traditional transboundary sharing economy. The DEIS further affirms that "Canadian communities would be among the most likely to experience potential impacts due to their proximity to and reliance on the PCH" (3-170), but does not analyze these disproportionate impacts. It is also silent on compensation for these potential adverse economic impacts	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
57.	Chandra	Turner	Inuvialuit Game Council	75904	45	Subsistence Uses and Resources	· The Inuvialuit-Inupiat polar bear agreement states that "(d) The settlements and their outpost camps whose hunting practices may be affected by this Agreement are Barrow, Nuiqsut, Wainwright, Atkasuk and Kaktovik in the United States and Inuvik, Aklavik, Tuktoyuktuk and Paulatuk in Canada." The impacts to Inuvialuit subsistence use of polar bears from the proposed project activities are not considered in the DEIS. This is an omission.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Withheld	Withheld	—	77891	5	Subsistence Uses and Resources	he Gwich'in are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Arctic Refuge Coastal Plain for calving and post-calving habitat. The Gwich'in consider the Coastal Plain to be sacred and believe that protecting the Arctic National Wildlife Refuge is vital to their human rights and food security. A significant portion of Gwich'in subsistence comes from the Porcupine Caribou Herd, yet BLM concluded that there will be no impact on the Gwich'in subsistence food source, even while acknowledging oil and gas impacts on caribou. BLM asserted that the Gwich'in do not qualify for an 810 hearing (necessary under the Alaska National Interest Lands Conservation Act), which is required for development that will substantially affect subsistence - ignoring the traditional knowledge and human rights of the Gwich'in.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.
59.	Idalia	Perez	—	79874	1	Subsistence Uses and Resources	The impacts would be felt most by local, native Gwich'in people, who would be impacted by: 1. direct disturbance of hunts, displacement of resources from traditional harvest areas, and hunter avoidance of industrialized areas 2. decreased water quality caused by water extraction and construction of ice roads and pads, gravel mining, and wastewater discharges from a central processing facility 3. decrease access to clean air due to release of pollutants from the drilling machines and transportation vehicles, and gas leaks like have happened in so many drilling operations.	The Draft EIS identifies multiple potential impacts to Gwich'in subsistence uses. The Gwich'in do not currently use the Coastal Plain for subsistence uses and therefore would not experience direct effects associated with development within that area. However, impacts on Gwich'in resulting from displacement of resources and real or perceived contamination are addressed.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	43	Subsistence Uses and Resources	3-172 The DEIS states that up to 50% of subsistence caribou harvesters may avoid development activities or infrastructure at some point over the period of development. The FEIS should be revised to provide additional information and context. In fact, from 2013 to 2016, between 51% (2016) and 61% (2013) of Nuiqsut Caribou Subsistence Monitoring Project respondents reported avoidance of any subsistence use area during the study years. Of these respondents, only 33% (2016) to 46% (2015) reported doing so for reasons associated with development. See Stephen R. Braund & Associates, Nuiqsut Caribou Subsistence Monitoring Project: Results of Year 8 Hunter Interviews and Household Harvest Surveys (Aug. 9, 2017) (annual reports available at https://northslopescience.org/nuiqsut/). The most recent study year (2016) showed a decrease in the percentage of respondents avoiding any area and a decrease in the percentage of respondents avoiding for development reasons.	The Draft EIS has been revised to reflect the most recent Nuiqsut Caribou Subsistence Monitoring Project data on hunter avoidance.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Deana	Lemke	Porcupine Caribou Management Board	80214	8	Subsistence Uses and Resources	2. The draft EIS does not adequately consider impacts to Canadian PCH subsistence harvesters and other hunters. The draft EIS recognizes that Canadian users account for approximately 85% of the harvest (page 3-168 and Figure 3-7) but does not include an adequate assessment of the impacts of development on Canadian subsistence and licensed PCH hunters. Given that the proposed development is predicted to negatively affect the productivity of the PCH (Russell & Gunn 2019), the draft EIS is inaccurate when it concludes that development in the program area would not appreciably affect the availability or abundance of caribou for subsistence use (p E-11, E-13 and E-15).	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.
62.	Deana	Lemke	Porcupine Caribou Management Board	80214	9	Subsistence Uses and Resources	The PCMB notes that when the International Porcupine Caribou Agreement refers to "users" and "affected users" of the PCH, it does not differentiate between users on either side of the international boundary. The International Porcupine Caribou Agreement, section 2.b., specifies that native users include those Canadian users defined under the PCMA. Canadian user communities include Old Crow, Dawson City, Mayo, Fort McPherson, Tsiigehtchic (Arctic Red River), Inuvik, Aklavik and Tuktoyaktuk. These communities should be afforded similar focus in the draft EIS to Kaktovik and other Alaskan user communities.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Deana	Lemke	Porcupine Caribou Management Board	80214	10	Subsistence Uses and Resources	The PCH has provided food security for remote and isolated communities in Yukon and Northwest Territories for millennia. In addition to providing food and sustenance, traditional harvesting practices ensure native users uphold important cultural values and maintain an ongoing connection to the land. Canada's commitment to protecting the subsistence harvesting rights of First Nation and Inuvialuit communities is evident from the creation of the PCMA, with the following wording: The parties hereto recognize the value of these caribou to Canada generally and that a special relationship exists between native users and these caribou. The parties recognize the special dependence of all native users on the Porcupine Caribou and in particular, the unique dependence of the native users of Old Crow on the Porcupine Caribou. The draft EIS is deficient in recognizing the interests of Canadian traditional PCH user communities. It is incumbent upon BLM to ensure that any risks of jeopardizing the traditional way of life of Canadian native users are accurately identified and avoided.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	Deana	Lemke	Porcupine Caribou Management Board	80214	27	Subsistence Uses and Resources	Benchmarks & Criteria Continuation of subsistence uses is essential Established References References to "users" in the International agreement on conservation of PCH Principles of conduct in the field of the environment for the guidance of States in the conservation and harmonious utilization of natural resources shared by two or more States Historical harvest data of adjacent First Nation and Inuvialuit user communities Draft EIS deficiency The EIS presents the range-wide harvest in Figure 3-7 which is the allocation of historic use from the PCH Harvest Management Plan. However, the EIS limits its considerations to Kaktovik when discussing potential impacts to harvest. (See comment below about harvest data.) The potential impact on Canadian "users" is not acknowledged and Canadian traditional user communities are not being consulted.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
65.	Deana	Lemke	Porcupine Caribou Management Board	80214	28	Subsistence Uses and Resources	Benchmarks & Criteria Recognition of the traditional dependence on caribou and that in some cases no other practical alternative to replace food supplies are available Established References Recognition in the PCMA that Old Crow has a unique dependence on PCH Demonstrated cultural importance of PCH for Inuvialuit and other Yukon First Nations. Draft EIS deficiency EIS only addresses Kaktovik and Alaskan use. Potential impact on Canadian users is not acknowledged. No aboriginal traditional knowledge is referenced.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Deana	Lemke	Porcupine Caribou Management Board	80214	29	Subsistence Uses and Resources	Benchmarks & Criteria When evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, including cumulative impacts, to the Porcupine Caribou Herd, its habitat and affected users of Porcupine Caribou Ensure opportunities for customary and traditional uses of the Porcupine Caribou Herd ... in Yukon and the Northwest Territories, Native users as defined by sections A8 and A9 of the PCMA Established References International agreement on conservation of PCH (Item 2c) Historical harvest data of adjacent First Nation and Inuvialuit user communities Cultural significance of PCH to Canadian traditional user communities Draft EIS deficiency EIS mainly addresses impacts to Kaktovik and acknowledges four other Alaskan Arctic communities. It also provides caribou data for 10 Alaskan communities (most are not PCH harvesters) in terms of numbers and in pounds of meat (Appendix M); however, the potential impact on Canadian users is not acknowledged The EIS outlines the International Porcupine Caribou Agreement in Appendix D but does not address international aspects of herd management.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Tyler	Selden	—	80606	1	Subsistence Uses and Resources	t seems that the BLM has focused much of its analysis on the effect of drilling to subsistence to the areas north of the Brooks Range and even that areas' analysis seems brushed over and incomplete. While the actual development will be concentrated north of the mountains it will have far reaching impacts. Anything that adversely effects the caribou will do the same to the animals that depend on them. The caribou are an incredibly important spoke in the wheel of life within the Arctic Refuge. As trappers we depend on healthy populations of predators, predators depend on healthy populations of prey - its simple to see the connection between the caribou and the health and success of all life, human and otherwise within the whole region. I would strongly urge BLM to take into consideration the effect on subsistence lifestyles within the whole range of the Porcupine Caribou Herd.	The Draft EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and all communities within the range of the PCH.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
68.	Anne	Fuller	—	80944	2	Subsistence Uses and Resources	Subsistence resources should be protected. There should be an ANILCA 810 hearing held in places other than Kaktovik. Any scientific study of the caribou needs to incorporate indigenous knowledge in order to consider the full range of areas and habitats that are vital to caribou throughout the year.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.
69.	Herbert	Kinneeveauk	Tikigaq Corporation	81041	4	Subsistence Uses and Resources	Elsewhere on the North Slope, data has shown that in communities that have road access, more overland hunting is occurring as subsistence hunters have greater access to subsistence areas which seems obvious, but the DEIS includes narrative that subsistence hunters who use industry infrastructure will impact subsistence users who choose not to. This also ignores the reality of the management framework in place in the Coastal Plain, which restricts local access into the Refuge.	The EIS acknowledges that use of roads have been documented in other communities and cites Nuiqsut subsistence monitoring reports; however, these reports also document hunter avoidance of roads and reports of decreased caribou availability resulting from roads. The EIS lists the various potential benefits of road access, in addition to the potential impacts, all of which have been documented in other communities. Text has been added to clarify that the situation in Kaktovik as it pertains to access is unique.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Withheld	Withheld	—	81138	2	Subsistence Uses and Resources	Compounding these failure is the further failure of the EIS to acknowledge that the loss of caribou productivity on the land and resulting impoverishment of the ecosystem as a whole will have profound impacts on the Gwich'in Athabaskan people and other peoples whose cultures, identity, and worldviews have evolved over millenia in relation to the caribou and the land. Merely listing facts about modern-day subsistence foods and lifestyles fails to do justice to these people whose very identity will be damaged by the proposed project.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH. In addition, the EIS acknowledges the traditional uses of the program area and the cultural and spiritual importance of the area to the Iñupiat and the Gwich'in under Sociocultural Systems.
71.	Rick	Bates	Canadian Wildlife Federation	81178	1	Subsistence Uses and Resources	Perhaps the most concerning issue raised by the Draft Environmental Impact Statement is that consultation with subsistence users of the Porcupine Caribou Herd in Canada has not been conducted. As identified in the Draft Environmental Impact Statement, nearly 85% of the Porcupine Caribou Herd annual subsistence harvest occurs in Canada, and a joint U.S. – Canada collaborative consultation with these Canadian communities is needed.	The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	Withheld	Withheld	—	81183	1	Subsistence Uses and Resources	This hurried process is disingenuous and incompatible with examining the true negative impacts drilling would have. Particular attention must be paid to the impacts drilling in the Arctic National Wildlife Refuge will have on the members of the Gwich'in Nation, who consider the area sacred and who will feel the impacts of drilling most acutely. Please protect the subsistence needs of the Gwich'in people who, for thousands of years, have depended on the Porcupine caribou herd, which migrates through what is now the Arctic National Wildlife Refuge to calve in the Coastal Plain. The indigenous Gwich'in people have relied on this rich natural heritage for their own cultural and nutritional survival. Your plan fails to address the fact that oil exploration will likely drive away the Porcupine caribou herd, thus depriving the Gwich'in of eighty percent (80%) of their food supply. Any plan that prioritizes corporate greed over human rights is unacceptable.	The EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH. The subsistence section incorporates biological conclusions regarding potential impacts to PCH caribou.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Withheld	Withheld	World Wildlife Fund	81184	10	Subsistence Uses and Resources	The BLM's draft EIS also does not fully consider the impacts of oil and gas development on indigenous peoples' culture and subsistence harvest. The decline of the PCH population that would result from development of the Coastal Plain will very likely have serious, unavoidable and far-reaching impacts, not only on the American Inuit population (Gwich'in, Na-cho Nyak Dun, Vuntut Gwitchin, Tr'ondek Hwech'in), but on the Canadian Gwich'in people and in Canadian Inuit communities in the Inuvialuit Settlement Region (ISR). The importance of the PCH to these northern communities cannot be understated. Caribou are not simply a source of food to the Inuit people, but are key to their culture and identity. The PCH have been harvested for many generations by the Gwich'in people, ISR communities, and American Inuit people, providing food, clothing, tools, shelter, and a connection to the land, community and ancestors. Individuals from nearly every community near the range of the PCH are involved in its harvest.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Steven	Amstrup	Polar Bears International	81368	26	Subsistence Uses and Resources	The economic effects of potential exploration and development on North Slope Borough subsistence resources and users (and related sociocultural systems) should be further examined by BLM. The DEIS recognizes that noise, traffic, and human activity; infrastructure (physical barriers); contamination; and other factors may "affect resource availability, resource abundance, and user access for residents of the study communities, which in turn would result in adverse economic impacts for those whose cost of living would rise as a result of needing to purchase alternative foodstuffs" (p. 3-197). Further, "future development in the program area would have potential lasting adverse effects on cultural practices, values, and beliefs through its impacts on subsistence" (p. 3-197). Yet there is no effort at quantifying the economic costs of damage to or loss of these "subsistence uses of resources of major importance for the subsistence study communities" (p. 3-197).	The subsistence analysis addresses the potential economic impacts to subsistence, including increased costs and time associated with reduced availability of subsistence resources and changes in harvester access.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	Brook	Brisson	Trustees for Alaska	98270	238	Subsistence Uses and Resources	Additionally, BLM's discussion of potential restrictions to use of marine mammals is deficient. The DEIS's environmental justice section acknowledges that there are impacts to subsistence use of bowhead whales and other marine mammals from oil and gas activities. 2118 Hunters are required to travel further as a result of noise and traffic.2119 Reduced harvest of whales would interrupt and alter sharing and trading networks with different communities and regions in Alaska and Canada.2120 The DEIS fails to account for any of these impacts and merely concludes that large vessel traffic could temporarily disturb or displace whales or bearded/ringed seals. These animals demonstrate habituation to noise and activity associated with vessel traffic and onshore infrastructure when disturbance does not result in physical injury, discomfort, or social stress."2121 This fails to adequately consider how harvest interruptions would restrict the availability of marine mammals for subsistence use.	The subsistence analysis addresses potential impacts to resource availability of bowhead whales, polar bears, and seals, resulting from noise, traffic, and human activity, specifically vessel traffic. Added text addressing potential effects to marine mammal harvest success for individual hunters. Because the majority of development would be land-based and because of the existence of CAAs which have been reported by bowhead whale hunters to reduce impacts to harvesting activities, large-scale changes in marine mammal availability are not expected to occur.
76.	Brook	Brisson	Trustees for Alaska	98269	23	Subsistence Uses and Resources	The draft EIS is inconsistent in its acreage numbers for each anchor development, listed in most places as 750 acres.315 In the draft EIS analysis of development impacts on subsistence, however, it states in two places that an anchor development consists of only 488 acres.316	Unclear what the commenter is referring to. There is no reference to anchor developments, or 488 acres, in the subsistence section

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	Withheld	Withheld	Alaska Wilderness League	81382	4	Subsistence Uses and Resources	The third conservation purpose under ANICLA is: (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and BLM acknowledges how 22 Alaskan communities and seven Canadian user groups could be adversely impacted if post-lease oil and gas activities change caribou resource availability or abundance for these users. Despite such acknowledgment, BLM's draft EIS public health section focuses narrowly on only one North Slope community and fundamentally fails to meaningfully analyze how the health of the 21 other American communities and the other seven Canadian groups could be impacted by the proposed leasing program. Because of the leasing program's connections to subsistence uses of the Porcupine Caribou Herd, and because of the acute human rights issues inherent in subsistence, BLM must revise the draft EIS to comprehensively analyze how potential changes to subsistence resource availability and harvest will impact regional residents' health in both Alaska and Canada.	The EIS addresses impacts to 22 Alaskan communities, to include four subsistence study communities, as well as seven Canadian user groups of the PCH. The analysis does not indicate substantial impacts to the abundance or availability of subsistence resources. Therefore, impacts to Canadian communities is expected to be similar to those in Arctic Village and Venetie.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
78.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	1	Subsistence Uses and Resources	the draft EIS fails to give effective consideration to the potential indirect impacts to Canadian subsistence users from oil and gas development on the calving and post-calving range of the Porcupine Caribou Herd. This omission undermines the intent behind of the International Porcupine Caribou Treaty (section 3.b. "3.b. The Parties will ensure that the Porcupine Caribou Herd, its habitat and the interests of users of Porcupine Caribou are given effective consideration in evaluating proposed activities within the range of the Herd."), and demonstrates a lack of understanding and appreciation for customary and traditional uses by Canadian subsistence users. TH acknowledges that the draft EIS does include some brief references to Canadian subsistence harvest in section 3.4.3 (pages 3-167 to 3-177). However, when making conclusions on the effects of each development alternative on subsistence, the draft EIS limits its analysis to direct impacts to Alaskan subsistence communities only (as per requirements under ANILCA Sec. 810, Appendix E). Given this narrow view, the only community to be directly affected would be Kaktovik residents who hunt within the program area. The draft EIS does not explain why BLM chose to limit its analysis to "study" communities despite recognizing that "Canadian communities would be among the most likely to experience potential indirect impacts due to their proximity to and reliance on the PCH" (p. 3-170).	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	2	Subsistence Uses and Resources	Harvesting rights of native users continue to be protected through land claims agreements; however, for conservation purposes, native user communities have agreed to implement a series of harvest restrictions when the herd falls below certain thresholds. For example, if the herd fell below 45,000 animals (i.e. the "red zone"), harvest by licensed hunters would be closed and harvest by native users would be limited to ceremonial purposes only. It should now be clear that if oil and gas development causes or accelerates a substantial decline in the PCH population, Tr'ondëk Hwëch'in and other Parties to the PCMA may be subject to harvest restrictions thereby impacting our ability to participate in subsistence activities and threatening our cultural ties to the herd. These restrictions would represent a significant sacrifice by Tr'ondëk Hwëch'in citizens for the conservation of the Porcupine Caribou Herd in the face of threats to critical caribou habitat from oil and gas development.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. The potential for increased regulations resulting from decreased resource availability is addressed in the cumulative analysis.
80.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	39	Subsistence Uses and Resources	While the DEIS does reference what can be called Gwich'in "creation stories"-a time before there was time when caribou were people and people were caribou, and at their separation there remains a part of humans in caribou and caribou in people ³⁰ -the DEIS fails to address how oil and gas development will impact Gwich'in culture, identity, spirituality, way of life, and worldview. These stories are compelling, providing important insight into the culture, identity, spirituality, way of life, and worldview of the Gwich'in and their view of caribou (and all animals) as sentient beings.	The EIS is focused on and provides detailed discussion of the characteristics of, and impacts to, the Coastal Plain project area, and thereby to Iizhik Gwats'an Gwanaii Goodlit landscape given that the Coastal Plain project area comprises all aspects of it. Section 3.4.2 discusses the importance of the PCH and Iizhik Gwats'an Gwanaii Goodlit landscape to the Gwich'in people. Section 3.4.4 discusses Gwich'in culture, identity, social organization, and belief systems and analyzes impacts to these characteristics of the Gwich'in.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	60	Subsistence Uses and Resources	The DEIS fails to adequately describe the impacts of oil and gas development in the Coastal Plain on the subsistence activities and the socio-cultural systems of the Gwich'in, particularly in Arctic Village and Venetie. This DEIS defines subsistence as "[h]arvesting of plants and wildlife for food, clothing, and shelter. The attainment of most of one's material needs (e.g., food and clothing materials) from wild animals and plants." (DEIS, at Glossary-16). Using this definition, the BLM emphasizes subsistence practices and resources over the location where subsistence activities occur. The BLM reiterates the importance of subsistence practices and resources over the specific location of subsistence activities in the opening paragraph of the Subsistence Definition and Relevant Legislation subsection of the DEIS: Subsistence is a central aspect of rural life and culture and is the cornerstone of the traditional relationship of the indigenous people with their environment. Residents of the study communities rely on subsistence harvests of plant and animal resources both for nutrition and for their cultural, economic, and social well-being. Activities associated with subsistence-processing, sharing, redistribution networks, cooperative and individual hunting, fishing, and gathering, and ceremonial activities-strengthen community and family social ties, reinforce community and individual cultural identity, and provide a link between contemporary Natives and their ancestors. These activities are guided by traditional knowledge, based on a long-standing relationship with the environment. More than just food, subsistence includes economic, social, cultural/traditional, and nutritional elements. (DEIS, at 3-160). The DEIS fails to adequately analyze impacts to Neets'??? Gwich'in subsistence,	The EIS analysis assesses direct, indirect, and cumulative impacts to subsistence including the subsistence uses of the Gwich'in. The EIS does not focus solely on where subsistence occurs (i.e., use areas), does address the reliance on subsistence harvests of plants and animals for both Iñupiat and Gwich'in communities, and uses the use areas to identify the types of likely effects (e.g., direct or indirect) that each community may encounter. Subsistence definition has been updated in glossary to that of Title VIII of ANILCA Section 803.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	because its analysis does not adhere to its own definition of subsistence. The DEIS instead focuses on where subsistence occurs in its analysis. The BLM must expand and correct its analysis to assess direct, indirect, and cumulative impacts on the practices and resources of subsistence.	(see above)
82.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	61	Subsistence Uses and Resources	There are certainly place-based impacts that the DEIS must address, but the BLM's reliance on location of subsistence is flawed given that caribou, a keystone subsistence species, and waterfowl are migratory animals. Impacts to the animals in one location will affect all of the people who rely on these animals throughout their annual migration routes. Given this, the BLM must assess impacts equally to all communities that rely on these migratory animals. This means assessing the twenty-two Alaska communities and seven Canadian communities reliant on the PCH using the same methods with comparable data. Having equal analyses relies on having comparable data sets. The DEIS, by its own acknowledgement, lacks comparable subsistence data for Arctic Village. (DEIS, at 3-165).	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
83.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	62	Subsistence Uses and Resources	The DEIS's reliance on limited data creates an inaccurate picture that fails to meet requirements for EIS methodology and scientific accuracy. The NEPA regulations state, "[a]gencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."43 As the U.S. Army states in regard to EIS methodology and scientific accuracy, "[a]ll analyses must use accepted scientific approaches, using an exact, objective, factual, and systematic or methodological basis. Again, the analysis should be objective, systematic, accurate, precise, and consistent."44 Relying on limited data is not "accurate, precise, and consistent" which raises scientific accuracy concerns.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	63	Subsistence Uses and Resources	The DEIS fails to provide an adequate quantitative assessment of the impacts a reduction of the PCH would have on Gwich'in communities. The Gwich'in communities of Arctic Village and Venetie do not have the diversity of subsistence species that North Slope communities have (i.e., marine mammals). Therefore, if the PCH suffer significant losses that affect the subsistence harvest of Arctic Village and Venetie, there are few opportunities for these communities to switch from primarily caribou to other subsistence resources. ⁴⁵ The loss of caribou in Venetie would result in a 33% reduction (29,925 lbs.) of harvested meat. ⁴⁶ That loss would be significantly higher in Arctic Village, because residents there rely less on moose and other subsistence resources. ⁴⁷ Moreover, there is high heterogeneity of households in communities, in terms of their cash income levels, harvesting, and sharing, and consequently their resilience to shocks. ⁴⁸ Some households report high food insecurity. ⁴⁹ A reduction in available caribou for harvesting in Arctic Village and Venetie would result in major food security and health hardships for some, if not most, village households.	The data cited by the commenter are acknowledged and cited in the Draft EIS under Cumulative Impacts. A reference was added regarding the particular vulnerability of Arctic Village.
85.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	64	Subsistence Uses and Resources	The BLM's portrait of food insecurity and resiliency differs substantially from reality. The DEIS suggests that communities are infinitely resilient and will not face food security and public health impacts from a decrease in caribou. This conclusion is incorrect, as it fails to acknowledge that there are thresholds that can result in irreversible changes to these social-ecological systems. ⁵⁰	The Draft EIS acknowledges in several sections the vulnerability of the study communities to large scale changes in subsistence and does not conclude that communities are infinitely resilient. Text has been added to Section 3.4.3 and 3.4.4 to note that there are limits to adaptation and resiliency.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	65	Subsistence Uses and Resources	The DEIS further suggests that Kaktovik is the primary user of subsistence resources in the Program Area. (DEIS, at 3-161). This statement ignores the ecological reality of migratory species (such as caribou and waterfowl) and the lack of diversity of harvest resources in communities such as Arctic Village.	The EIS identifies that Kaktovik residents are the "primary subsistence users of the program area." This is a true statement. The EIS does not identify they are the "primary users of subsistence resources in the Program Area."
87.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	66	Subsistence Uses and Resources	The DEIS fails to address and incorporate Gwich'in traditional knowledge about the Coastal Plain, the PCH, other migratory species, and subsistence resources. The Gwich'in's understanding that the Coastal Plain is sacred is not only a statement of their spirituality and cosmology, but also a statement based on millennia of observation, understanding, and relating to the resources-their traditional knowledge. Gwich'in traditional knowledge understands the social interactions of caribou, how they communicate, how the herd changes its winter range periodically to maintain the quality of forage in various areas, how they avoid some areas and why, and how weather and human behavior have affected caribou and peoples' success in hunting. The Gwich'in's assertions that oil and gas development in the calving and post-calving areas will have negative impacts on caribou are based on traditional knowledge gathered over millennia.	Traditional knowledge, to include oral histories, has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
88.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	67	Subsistence Uses and Resources	The DEIS fails to recognize that although residents of Arctic Village reside outside the Program Area, they are highly dependent on migratory subsistence resources (i.e., caribou, waterfowl) that make use of the Program Area. (DEIS, at 3-164). Because the Program Area is a sensitive habitat that is integral to the reproductive health of these migratory species, any development in the Program Area would have significant impacts on the subsistence resources available to residents of Arctic Village.	The Draft EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH, including Arctic Village.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	68	Subsistence Uses and Resources	The DEIS's explanation of why there is limited harvest data from Arctic Village is incomplete. The lack of data is a reflection of the community's deep distrust of the state and federal governments, resulting from a long history of lies and broken promises. BLM's refusal to partake in a good faith analysis of subsistence impacts on Gwich'in communities is evidenced by its inadequate explanation of the lack of harvest data, its failure to supplement the available data, and its refusal to hold ANILCA Section 810 subsistence hearings in either Arctic Village or Venetie.	The text has been edited to acknowledge the distrust of outsiders and associated lack of data. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.
90.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	69	Subsistence Uses and Resources	The harvest data the DEIS relies on for Venetie are suspect because of the limited number of reporting households. (DEIS, at M-23 to 26). This seriously undermines the accuracy of the data for all years except 2009, which had a 94% participation rate. The omission of several "super households" in a survey would skew numbers downward in significant ways. The DEIS fails to mention the number of households in the villages, their populations, and their demographics. (DEIS, at 3-164 to 166).	Participation rates were over 90 percent in three of the five listed studies (2008-09, 2009, and 2010-11). In two of the studies (2009-10, 2000) participation rates were 72 percent and 76 percent, respectively. Household samples sizes are in line with household surveys in Alaskan communities and are generally adequate to estimate harvests for a community. Footnote has been added to note the potential for error based on exclusion of super harvester households.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
91.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	70	Subsistence Uses and Resources	It can be assumed that the harvest of caribou in Arctic Village is higher per capita than that of Venetie, because of the more limited availability of moose (and other resources) in the Arctic Village area. Evidence also shows that resources harvested by these communities is shared with other communities. The dependence on these subsistence resources is not limited to these two villages. This sharing relationship is especially significant between Venetie and Arctic Village, as they are "sister" villages that share ownership of tribal lands and a common tribal government.	Importance of sharing, including the importance of the sharing networks between Arctic Village and Venetie, are included in the Overview of Subsistence Uses for Venetie. Text has been added to reference the importance of the sharing relationship between Arctic Village and Venetie.
92.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	71	Subsistence Uses and Resources	The DEIS significantly underrepresents the traditional and contemporary use areas of the Gwich'in of Arctic Village and Venetie. (DEIS, at Map 3-44). This level of misrepresentation of the Gwich'in demonstrates the BLM's fundamental lack of knowledge about the subsistence, cultural, and historic activities and practices of the Gwich'in. The maps below (Figure 4) represent a more accurate depiction of travel between Arctic Village and Venetie.	BLM reviewed Gary Kofinas et al., Subsistence Sharing Networks and Cooperation: Kaktovik, Wainwright, and Venetie, Alaska (2016) and could not find the maps referenced as Figure 4. Furthermore, the travel routes in Figure 4 are all located outside the program area south of the Brooks Range and therefore would not substantially change the findings of the EIS regarding potential impacts to subsistence.
93.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	74	Subsistence Uses and Resources	Further, it is inappropriate for the DEIS to discuss the harvests of both caribou and moose together as "large mammals." (DEIS, at Table M-15). These resources are fundamentally different to the community. The DEIS's treatment of them as the same subsistence resource downplays the importance of caribou to the community.	Resource categories as displayed in Table M-15 are a standard method of displaying overall subsistence contributions. Individual species contributions are provided in Table M-17 and species level importance are provided in M-19.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
94.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	75	Subsistence Uses and Resources	The BLM's ANILCA 810 preliminary analysis is also flawed and must be corrected. The DEIS states, "Kaktovik and Nuiqsut are the only communities whose subsistence use areas overlap the program area. Thus, they are the only communities that could be legally or physically prohibited from accessing these areas." (DEIS, at E-9). This conclusion is insupportable given BLM's acknowledgement that it lacks comparable harvest data for Arctic Village. (See DEIS, at 3-165). The BLM must procure updated subsistence data for Arctic Village and Venetie in order to make this ANILCA 810 analysis defensible. The BLM must hold ANILCA 810 Hearings in Arctic Village and Venetie as a start for collecting the necessary updated subsistence data.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.
95.	Withheld	Withheld	—	82285	2	Subsistence Uses and Resources	Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which would have significant ramifications over a vast area of Alaska and Canada that would persist beyond the estimated 130 years of exploitation. The DEIS fails to address this reality and its effects on indigenous people. The Arctic Refuge, for example, is vitally important to the Athabaskan Gwich'in people whose culture is intimately tied to the caribou, especially the Porcupine herd. These ties are cultural, spiritual and economic. Caribou are critical to survival of the Gwich'in people and we must respect that.	The Draft EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
96.	Dana	Durham	—	83308	1	Subsistence Uses and Resources	Human subsistence rights of the Gwich'in are being ignored. Studies of caribou in the Prudhoe Bay area show caribou as declining in numbers. BLM acknowledges the caribou numbers will be impacted. A significant percent of Gwich'in subsistence comes from the Porcupine herd that calves on the coastal plain. Yet BLM concludes that there will not be an impact on the Gwich'in so the Gwich'in are not allowed a 810 hearing required under ANILCA. How can BLM make this determination without a hearing. The human rights of the Gwich'in are being ignored. Solution to this problem is to not allow oil drilling-Alternative A.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.
97.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	23	Subsistence Uses and Resources	PCH are primarily harvested by indigenous peoples in Canada- with an overwhelming 85% of the harvest of the PCH occurring in Canada. As it currently stands, much time in the Draft is spent discussing potential impacts to the Gwich'in. BLM should modify their analysis in the Draft EIS accordingly.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
98.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	27	Subsistence Uses and Resources	ASRC is concerned with BLM's language assessing how subsistence users who choose to utilize potential industry roads may impact to subsistence users who chose not to use the road for subsistence (DEIS Pg 3-177). ASRC feels this commentary is inappropriate, outside the scope of NEPA, and an attempt to normalize an idea that subsistence users are impacting other subsistence users. We find this type of reasoning worrisome and inappropriate for BLM to analyze subsistence in this fashion. Our concern is that subsistence is becoming the source of the impact, rather than the activity BLM is required to analyze. BLM should strike this language.	Language regarding potential impact of local subsistence hunters on other subsistence hunters has been removed.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
99.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	9	Subsistence Uses and Resources	4. Pg. 3-190 "Disruptions to subsistence activities associated with future oil and gas activities could potentially indirectly affect social cohesion. As noted above, increased income and employment levels could change social ties and organization by causing certain individuals and households to shift to new, non-subsistence roles." This is insulting and does not accurately reflect the role of subsistence to the Iñupiat people. "Subsistence" to us goes far beyond the hunting of animals and gathering of berries, it is intrinsically linked to who we are as a people. To quote "In This Place: A Guide for Those Who Would Work in the Country of the Kaktovikmiut," "Although some use it, "subsistence" is certainly not an adequate or meaningful word [to describe the complex relations between us and the other beings with which we live and with which we have a mutually sustaining system of life] here either, at least not as it is normally defined and used outside the context of aboriginal use. We are not peasants. We do not subsist; we thrive here, live our lives with great relish." The idea that households would quit practicing subsistence in the face of increased income and employment is not consistent with who the Iñupiat are as a people; for us, subsistence and culture are inextricably intertwined.	The section "Subsistence Definition and Relevant Legislation" clearly defines subsistence as more than hunting and fishing and acknowledges the cultural and social importance of subsistence activities. While the shifting of subsistence roles has been documented in multiple studies, the sentence referenced by the commenter incorrectly implies that some households may cease subsistence activities altogether. The sentence has been edited to remove reference to "non-subsistence roles."

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
100.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	28	Subsistence Uses and Resources	3. Pg. 3-177 "In addition, the increased existence of road corridors in traditional use areas could shift how residents access subsistence harvesting areas, such as via roads, but could also affect resource availability for those who choose not to use roads." This statement is blind to the reality of the Kaktovikmiut who do not have any sort of access into the Refuge and would welcome any roads that would help them access their traditional subsistence harvesting areas, which they are currently re-stricted from accessing in the summer on All-Terrain Vehicles or other methods of motorized transportation.	Discussions of road access have been edited based on other comments to acknowledge the unique situation for Kaktovik residents and the particular benefit to residents in terms of access.
101.	Withheld	Withheld	—	83461	3	Subsistence Uses and Resources	It is unconscionable to me that a DEIS could be completed in 5 months. Obviously, the Trump administration wanted to ram this through. Draft EIS's are supposed to take 2 years to adequately do the research and collect all the information of impacts to wildlife and people of any projected plans. The public process was seriously flawed here and there are real discrepancies in what is written in the DEIS and what the BLM has found. For example: The BLM acknowledges that oil and gas can have impacts on caribou, then states that there will not be an impact on subsistence resources for the Gwich'in people and that the Gwich'in people do not qualify for an 810 hearing under ANILCA, which is REQUIRED for development that will substantially affect subsistence.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Withheld	Withheld	—	84578	3	Subsistence Uses and Resources	The fourth purpose of the Refuge is “to provide the opportunity for continued subsistence uses by local residents.” BLM has stated that alternative subsistence resources can be identified. This disregards the special relationship the Gwich’in people of Alaska and Canada have to the Porcupine Caribou Herd. This herd will be significantly impacted by development on the coastal plain. Native rights, needs, and opinions should not be so callously disregarded.	The Draft EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH
103.	Janet	Kimball	—	85051	1	Subsistence Uses and Resources	And members of the Gwich’in Nation will feel the impact of Arctic drilling most acutely. Your plan fails to address the fact that oil exploration will likely drive away the Porcupine caribou herd, thus depriving the Gwich’in of 80% of their food supply. Any plan that prioritizes corporate greed over human rights is unacceptable, and Arctic oil exploration cannot be allowed to move forward.	The Draft EIS identifies multiple potential impacts to subsistence resources and uses, including effects to caribou and communities within the range of the PCH
104.	Withheld	Withheld	Government of the Northwest Territories	92862	16	Subsistence Uses and Resources	The GNWT recommends the EIS include an analysis of what potential direct and indirect impacts changes to the Porcupine Caribou herd will have on the health and well-being of the people of the Northwest Territories who have customarily and traditionally harvested Porcupine Caribou to meet their nutritional, cultural and other essential needs. Furthermore, consideration should be given to food insecurity as a result of the project alongside potential for ecosystem condition changes from the project and climate change that will impact the Porcupine Caribou herd.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105.	Withheld	Withheld	Government of the Northwest Territories	92862	78	Subsistence Uses and Resources	The draft EIS states that “the NWT Gwich’in people, the Vuntut Gwich’in people, and the Inuvialuit are the primary users of the PCH in terms of number of caribou harvested,” (3-167) and that “most of the PCH harvest occurs in Canada.” The draft EIS further states that “The changing climate within the program area could affect the availability of subsistence resources and user access to harvesting areas,” and that “changes in resource abundance resulting from climate change could contribute to changes in resource availability caused by development in and around the program areas, thus further reducing their availability to subsistence users.” The Draft EIS analysis found that “In the case of the 22 Alaskan caribou study communities and seven Canadian user groups... those with a greater reliance on caribou would be more likely to experience potential indirect impacts related to caribou abundance or availability,” and that “potential impacts, particularly those relating to changes in calving distribution and calf survival are expected to be more intense for the PCH because of their lack of previous exposure to oil field development,” (3-169). The draft EIS determined that Old Crow, Aklavik, and Fort MacPherson are the most likely to experience potential indirect impacts due to their proximity and reliance on the PCH (3-170). It was further determined that “Overall, future development in the program area could have lasting effects on cultural practices, values, and beliefs through its impacts on subsistence. The potential impacts of development could result in reduced harvests, changes in uses of traditional lands, and decreased community participation in subsistence harvesting, processing, sharing, and associated rituals and feasts. Because of this, communities could experience a loss of cultural and individual identity	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
105. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	associated with subsistence, a loss of traditional knowledge about land, damaged social and kinship ties, and effects on spirituality associated with the degradation of the Alaska coastal plain," (3-175). Despite the intensity and severity that these potential impacts would have on the Northwest Territories subsistence users, the EIS has not included in the analysis, a determination of potential mitigations to decrease the severity of these impacts in the communities themselves. Recommendation The GNWT recommends the BLM give serious consideration to an Alternative with the least intensity of subsistence impacts for Northwest Territories subsistence users.	(see above)
106.	Withheld	Withheld	Government of the Northwest Territories	92862	79	Subsistence Uses and Resources	The GNWT recommends the BLM require mitigations to ensure that should impacts occur for Northwest Territories PCH subsistence users, actions are taken to mitigate these impacts in the communities.	Mitigation measures were designed to mitigate impacts to all PCH subsistence users. If objectives of a LS or ROP are not being met, there may be an exceptions, waivers, or modification which provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
107.	Withheld	Withheld	Government of the Northwest Territories	92862	80	Subsistence Uses and Resources	To the extent that calving grounds are disturbed by oil and gas development, PCH calf survival and herd numbers could be reduced. An overall reduction in the PCH could also affect harvest success among Inupiaq, the Gwich'in people, and Inuvialuit caribou hunters." While the draft EIS acknowledges the potential impacts to Canadian users, communities in Canada were not included in the scoping meetings and are not included in the ANILCA section 810 analysis or discussed in Section 1.7.2 or Section 1.10 of the draft EIS. Based on Russell and Gunn (2019) analysis there is a high risk the herd numbers may be reduced, especially given the timing of development will likely occur when the herd is in a decline phase of its cycle. References The GNWT recommends that public subsistence hearings be held at a minimum in Fort McPherson, and Tsiigehtchic and Aklavik. The BLM should ensure that the Hunters and Trappers Committees, Renewable Resource Councils and public are notified of such meetings.	Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
108.	Withheld	Withheld	Government of the Northwest Territories	92862	81	Subsistence Uses and Resources	The draft EIS has included a detailed analysis of the Gwich'in of Alaska and the Iñupiat of Alaska's socio- cultural systems and potential direct, indirect and cumulative impacts that may occur. This analysis has not included a detailed discussion of the Canadian Gwich'in and Inuvialuit socio-cultural systems, particularly given the significance of social and kinship ties, subsistence harvesting, and their deep connection to the PCH. The Gwich'in and Inuvialuit peoples are the principal subsistence harvesters of the PCH and BLMs analysis indicates that they will experience significant negative impacts from the program and no positive impacts (see recommendations 46 and 49). Recommendation The GNWT recommends that BLM include in their analysis how the Gwich'in and Inuvialuit subsistence users of the Northwest Territories may be impacted by the program, particularly as it relates to social cohesion and food security (including a potential increase in reliance on store bought food as a result of a decline of the PCH and how this relates to decreases in income and increases in poverty related to changes in subsistence activities), and detail potential mitigations to lessen these impacts.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
109.	Withheld	Withheld	Government of the Northwest Territories	92862	87	Subsistence Uses and Resources	"The United States (US) Fish and Wildlife Service (USFWS) determined that the preferred alternative selected in the Record of Decision (ROD) for the Arctic Refuge Revised CCP (USFWS 2015) and subsequent cumulative effects would not significantly restrict subsistence use of resources in the program area." Comment(s) It is not clear from this statement that the preferred option in the ROD is wilderness designation. This is an omission that becomes important in other aspects of the draft EIS. Recommendation The GNWT recommends the BLM clarify - what the preferred option in the CCP ROD was?	Page 3-211 of the Draft EIS notes that the USFWS 2015 CCP ROD recommended wilderness designation by Congress and that FWS has been managing the Coastal Plain to maintain wilderness characteristics.
110.	Withheld	Withheld	Government of the Northwest Territories	92862	89	Subsistence Uses and Resources	Direct habitat loss or alteration from future on-the-ground activities would not affect the availability or abundance of caribou for subsistence use." Comments Based on the quantitative analysis done in the Russell and Gunn (2019) report, this statement may be an over simplification of the effects. Recommendation The GNWT recommends the BLM review Appendix E considering the Russell and Gunn (2019) report.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. The Russell and Gunn report has been considered, and the EIS has been updated with new information, as appropriate.
111.	Withheld	Withheld	Government of the Northwest Territories	92862	95	Subsistence Uses and Resources	Data from Canada is missing in this analysis. In particular, for the PCH, where it is estimated 85% of the harvest is by Canadian Native users as defined in the PCMA. Recommendation The GNWT recommends the BLM include data from Canadian Native users in this analysis.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
112.	Amy	Law	Government of Yukon	94076	15	Subsistence Uses and Resources	Given the long history of cooperative management for the Porcupine caribou herd, the Government of Yukon is concerned that impacts to Canadian subsistence users are not fully considered. The draft EIS is clear that, "Canadian users accounted for 85 percent of the harvest, and Alaskan users were 15 percent of the harvest," and that, "...these Canadian communities would be among the most likely to experience potential indirect impacts due to their proximity to and reliance on the PCH" (Section 3.4.3, page 3-168). Despite this, impacts to Canadian subsistence users is only included in one table (Appendix M, Table M-21), one figure (Appendix A, Figure 3-7), and one map (Appendix A, Map 3-27).	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
113.	Amy	Law	Government of Yukon	94076	16	Subsistence Uses and Resources	The draft EIS is deficient with respect to transboundary effects because it does not provide equal consideration and analysis of how the project will impact Canadian subsistence users.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
114.	Amy	Law	Government of Yukon	94076	18	Subsistence Uses and Resources	A final significant deficiency is that the draft EIS is silent on mitigations for Canadian subsistence users.	Mitigation measures were designed to mitigate impacts to all subsistence users. If objectives of a LS or ROP are not being met, there may be an exceptions, waivers, or modification which provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
115.	Amy	Law	Government of Yukon	94076	19	Subsistence Uses and Resources	The draft EIS does not adequately consider impacts on Canadian harvesters. As the primary harvesters and subsistence users of the PCH, it is Canadians who will be the most impacted by herd declines. These impacts have been contemplated in the draft EIS, but the main focus is on Alaskan communities. This deficiency should be addressed through a more complete analysis of impacts to all users of this transboundary herd.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
116.	Amy	Law	Government of Yukon	94076	20	Subsistence Uses and Resources	As it stands, the Canadian communities who will be most significantly impacted by the leasing and subsequent activities will receive none of the benefits that could lead to mitigation of these impacts. These effects should be examined.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
117.	Amy	Law	Government of Yukon	94076	24	Subsistence Uses and Resources	The nutritional value of caribou, a traditional food source, contributes to the health of Indigenous populations in Canada and the United States. Market-based foods in Canada's northern communities is expensive, exacerbating issues of food security for households with limited income, and potentially increasing needs for income supports. Traditional food sources, whether harvested directly by a household member or obtained through sharing or bartering, provide a foundational food source that cannot be merely supplemented with 'equivalent' foods as required; country foods are preferred and should not be considered as a nice-to-have supplement to grocery store foods. Substitution will not mitigate the impacts on individual and community well-being that are associated with loss of a culturally important resource and practice. The draft EIS fails to consider these impacts at all in a Canadian context, much less propose specific mitigations to address these impacts.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
118.	Amy	Law	Government of Yukon	94076	46	Subsistence Uses and Resources	The objectives of the Agreement clearly outline the transboundary nature of PCH and the importance of managing its habitat and use in a manner that considers transboundary effects. The Agreement seeks "[t]o ensure opportunities for customary and traditional use". Parties are to ensure "effective consideration" of proposed activities within the herd's range. The draft EIS acknowledges that the Canadian harvest accounts for 85 percent of the total harvest from 1992 to 1994 (see Section 3, page 168) and states that "Canadian communities would be among the most likely to experience potential indirect impacts due to their proximity to and reliance on PCH" (see Section 3, page 170). However, the draft EIS fails to complete any substantive analysis. For example, Appendix M provides detail on the harvest and use patterns of the four Alaska communities, only identifying the Yukon and Northwest Territory licensed harvests in the summary Table M-21.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119.	Amy	Gulick	—	94077	2	Subsistence Uses and Resources	2) The Gwich'in people of both Alaska and Canada are culturally connected to the Porcupine Caribou Herd, which relies on the coastal plain for its calving and post-calving habitat. Despite acknowledging that oil and gas development can have impacts on caribou, the BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in, and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA, which is required for development that will substantially affect subsistence. This ignores the human rights of the Gwich'in.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA.
120.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	6	Subsistence Uses and Resources	7 DEIS vol. 1 at 3-168. We note that BLM does not have updated subsistence use information for all Gwich'in communities, which may impact this figure.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
121.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	18	Subsistence Uses and Resources	BLM arbitrarily limits its analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie. ²⁹ It is disrespectful for the Draft EIS to entirely ignore Canadian Gwich'in who rely so heavily upon the Porcupine Caribou Herd as well as our other Gwich'in communities in Alaska.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
122.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	21	Subsistence Uses and Resources	BLM ignored our clear requests during scoping to update its studies and information on subsistence use. BLM further failed to accurately consider impacts from the loss of subsistence use areas. While generalized maps of subsistence use areas were included with the DEIS, BLM did not consider the impacts to those areas. BLM should overlay each development scenario with these areas, to determine how subsistence use areas will be impacted through changes in land use designation, rights, and avoidance. Subsistence-use area loss should then be quantified. The BLM's existing maps are inadequate because they fail to depict specifically where subsistence resources and practices may be compromised	The EIS utilizes best available information. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
123.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	22	Subsistence Uses and Resources	BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation. ³² BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of impacts to subsistence use that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain, such as SAExploration's proposal that is now being considered for the winters of 2020-2021 and 2021-2022.	Appendix B explains the different types of seismic exploration that are analyzed in the EIS. Seismic exploration can be done across the full area of the Coastal Plain, even if an area is not available for lease. Site-specific NEPA analysis would be done for any proposed seismic explorations.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
124.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	24	Subsistence Uses and Resources	In addition to caribou, fish and waterfowl are important to our subsistence harvest and impacts to all of these resources were not carefully evaluated. BLM's overall analysis of specific subsistence resources is also insufficient. The DEIS fails to consider the extensive resources used for subsistence by communities reliant upon Arctic Refuge resources. Appendix M provides known levels of subsistence harvest for Kaktovik, Nuiqsut, Venetie, and Arctic Village. ³³ But analysis of impacts on these resources is substantially lacking, and BLM does not look beyond these four communities to consider all Gwich'in communities.	Text has been revised to reflect more detailed analysis of potential effects on subsistence uses of fish and waterfowl. The EIS does discuss potential impacts to the PCH and CAH study communities. Additional references to indirect and cumulative impacts to these communities.
125.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	28	Subsistence Uses and Resources	The DEIS merely mentions that reduced harvests could disrupt sharing networks, but there is no real consideration of effects or analysis of impacts. BLM merely states that changes would occur and "disruptions of social connections could thus increase vulnerability in communities." ⁴² The DEIS should look at specific communities sharing practices and the relative wealth of households to accurately determine impacts from reductions in trading and sharing of resources, and how that will impact Gwich'in culture and our way of life. The potential impacts to these social networks must be explained in much greater detail and actually analyzed; simply acknowledging it is insufficient.	Level of specificity for this would be determined at the project level authorizations. Site-specific analysis, including impacts associated with oil and gas activities, can more realistically be provided when the BLM receives an application to permit such activities with specific project proposals and locations. The Leasing EIS makes no decisions on such activities, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
126.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	36	Subsistence Uses and Resources	BLM further assumes that hunters will be able to adapt to the changes occurring around them. ⁶⁴ BLM cannot rely on the potential for adaptation to bypass a positive subsistence finding under Section 810. How BLM foresees hunters adapting should be described.	This section has been edited to acknowledge there are limits to a community's ability to adapt to development. In addition, the EIS acknowledges that certain communities may be more vulnerable to change than others.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
127.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	44	Subsistence Uses and Resources	BLM acknowledges that mitigation measures merely minimize, and do not eliminate impacts to subsistence.93 BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability. BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not it is enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its subsistence analysis, as that could negate any of the purported protections and benefits of such provisions.	Text has been added to address the limitations of mitigation in reducing impacts to subsistence
128.	—	—	Alaska Department of Natural Resources	94102	83	Subsistence Uses and Resources	59 Appendix E, Alternative B, Page E-9 ANILCA 810 Analysis As Alternative B, which is the most accommodating to oil and gas development, allows many activities and facilities along the Beaufort Sea coastline, the potential exists that these activities and facilities may adversely affect either the distribution of caribou in summer along the coastline or the use of this area by Kaktovik residents to harvest caribou by boat in summer. A careful evaluation of these potential effects should be included in the development of the finding of significant or non-significant restriction to subsistence uses.	The EIS states that development activities and infrastructure could divert caribou from the coastline and cause reduced harvest success for Kaktovik harvesters as they travel along the coast by boat.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
129.	Tim	Whitehouse	PEER	95601	80	Subsistence Uses and Resources	What are key information gaps? * Currently there is no complete synthesis of cultural work (subsistence, historical, and archaeological) that has been conducted in the Arctic Refuge as a whole or in particular for the northern half of the Refuge. A limited number of archeological and historical resource surveys have taken place on the Refuge due to funding, logistical difficulties of working in remote locations and lack of infrastructure to support investigations in the Refuge. A more thorough and complete synthesis of what work has been completed and in what areas would help identify informational gaps and help set priorities for future work.	As identified in the comment, limited survey work has been conducted in the program area and the EIS text identifies this fact. Reference to the USACE coastal survey has been added.
130.	Tim	Whitehouse	PEER	95601	81	Subsistence Uses and Resources	Community subsistence harvest data for Kaktovik is dated in terms of the in-depth subsistence community use surveys, which were conducted in 1985, 1986, 1992 (ADF&G). In 1995, the North Slope Borough (NSB) began to systematically collect subsistence harvest data for the eight villages in the Borough. However, the NSB was only able to collect subsistence harvest data for the village of Kaktovik in 1994-1995 and in 2002-2003. There needs to be a more thorough and consistent collection of community subsistence harvest information.	More recent harvest data for Kaktovik from 2007, 2008, 2009, 2010, 2010-11, 2011, and 2012 are described for Kaktovik (see Appendix M, Table M-1 and Table M-3

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
131.	Tim	Whitehouse	PEER	95601	82	Subsistence Uses and Resources	In 2010, Morgan Grover of the US Army Corps of Engineers conducted a survey of 70 known cultural sites along the coastal areas from Flaxman Island to the Canadian border (including the 1002 area) to examine the effects of environmental changes and erosion has had on these sites over the past 30 years. The study concluded that of the 69 previously reported cultural sites, 21 were found to be impacted to some extent by erosion or thermokarsting, and 20 had been completely eroded away. She concludes that many of the remaining cultural sites are in imminent threat of eroding in the next decade. Follow-up studies and research is needed to recover cultural information before it is lost to erosion. The report strongly recommended that selected threatened sites be documented and potentially excavated after consultation and agreement with Tribal leaders.	Additional discussion related to the Grover/USACE report has been added.
132.	Tim	Whitehouse	PEER	95601	83	Subsistence Uses and Resources	In 1982, Ed Hall conducted an inventory and survey of archaeological and historical resources in the 1002 area examining areas of high archaeological and historical potential. The areas surveyed were focused on areas proposed for exploratory drilling for oil and gas and areas more likely to have cultural sites such as coastal areas and barrier islands, and along rivers and streams that crossed the 1002 area, and high points of land that have overlooks above the surrounding tundra. There is a need to reassess these areas since visitors and users have reported several graves, human remains and artifacts in these areas that have not been documented and record by professional cultural resource staff.	The process for conducting cultural resource surveys associated with the Coastal Plain program area is being developed as part of the Section 106 programmatic agreement

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Tim	Whitehouse	PEER	95601	84	Subsistence Uses and Resources	The Porcupine Caribou Herd is of great importance as a major subsistence resource for both the Iñupiat and Gwich'in users in Alaska. Impacts to this herd could have significant ramifications on their traditional way of life and economics. There is a need for an analysis of the economic value of caribou to subsistence users, and the potential economic impacts that might result if the herd is negatively affected by oil and gas exploration and development on the 1002 area.	BLM will create an appendix to acknowledge data gaps

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
134.	Edward	Rexford	Native Village of Kaktovik	95607	16	Subsistence Uses and Resources	Pg. 3-177 The DEIS states "In addition, the increased existence of road corridors in traditional use areas could shift how residents access subsistence harvesting areas, such as via roads, but could also affect resource availability for those who choose not to use roads." In the current management scenario for the non-private lands in ANWR, the Kaktovikmiut do not have any access into the Refuge. While this statement may be true in other areas in Alaska, those documentations are based on a different management schematic where residents are not limited in their access. Kaktovik has long urged for road access to Kaktovik and through the 1002 area in part to increase our access to our traditional hunting areas. Furthermore, in communities with road access, such as Nuiqsut, more overland hunting is occurring as subsistence users have a greater degree of access to other subsistence areas. This statement should be corrected or deleted. The Porcupine Caribou Management Board, an advisory board established under the Porcupine Caribou Management Agreement to communicate information about the herd and provide recommendations to agencies responsible for managing the herd, states on their website "The Dempster Highway connects Inuvik, NWT to Dawson City, Yukon. The 670-kilometre road runs through the Porcupine Caribou herd's winter range. The road provides hunters with easy access to caribou, which means that caribou can be harvested when they are close to the highway."	The EIS acknowledges that use of roads have been documented in other communities and cites Nuiqsut subsistence monitoring reports; however, these reports also document hunter avoidance of roads and reports of decreased caribou availability resulting from roads. The EIS lists the various potential benefits of road access, in addition to the potential impacts, all of which have been documented in other communities. Text was added to clarify that the situation in Kaktovik is unique as it pertains to access.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
135.	Withheld	Withheld	Council of Athabaskan Tribal Governments	95611	4	Subsistence Uses and Resources	Despite acknowledging this relationship, and that oil and gas may have impacts on the PCH, BLM erroneously concludes that there may not be a significant restriction subsistence use for the Gwich'in. Following their acknowledgement, BLM does not find a positive 810 determination for Arctic Village and Venetie. This is clearly flawed logic and blatantly ignores readily available data and documented traditional knowledge of the Gwich'in.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. The EIS has been updated with new information, as appropriate.
136.	David	MacMartin	Gwich'in Tribal Council	96239	5	Subsistence Uses and Resources	* How were caribou traditionally managed, and what are the best ways for all stakeholders to work together to ensure traditional caribou management happens in the current context? * Harvest details are a gap: How and where are Gwich'in hunters hunting? When?	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
137.	Deanna	Noel	Defenders Of Wildlife	97156	5	Subsistence Uses and Resources	And then I would like to officially, onrecord, ask the BLM to involve the Canadian Gwich'inalso, because this is also their fight. This is also their spiritual and cultural connection that isbeing attacked, their food security.	DOI has conducted consultation with the International Porcupine Caribou Board and with Canadian officials. Sections 3.4.2 and 3.4.3 of the EIS address spiritual, cultural and subsistence related impacts to the Gwich'in, including those in Canada. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
138.	Susan	Smith	—	97752	2	Subsistence Uses and Resources	The subsistence needs of the Native people who rely on the caribou population (hence the word subsistence: required for life) have not been adequately addressed. ANILCA 810 requires special consideration for development that affects subsistence. The DEIS says that oil/gas development will affect the caribou population, yet says there is no impact on subsistence resources. This is a complete contradiction. The impact of development on caribou and the people who depend on them needs to be defined. And then mitigated by new provisions.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. The EIS has been updated with new information, as appropriate.
139.	Christy	Stebbins	—	97980	3	Subsistence Uses and Resources	On p. 3169, it states: "In all cases, future development would affect subsistence uses of resources of major importance for the subsistence study communities." Furthermore, potential impacts to the Porcupine Caribou Herd could be more intense "because of their lack of previous exposure to oil field development" (Vol. 1, 3-169). But then, in the Appendix E.2.2.4, the DEIS states: Alternative B [the most aggressive and egregious of the alternatives] will not result in a significant restriction to subsistence uses." Point me to the proof of this.	Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. The EIS has been updated with new information, as appropriate.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
140.	Daniel	Suman	—	98022	4	Subsistence Uses and Resources	Subsistence Hunting in Alaska. The Great State of Alaska. Retrieved from: www.adfg.alaska.gov/index.cfm?adfg=subsistence.hunting.10Arctic_FrequentlyAskedQuestionsaboutCaribou-Arctic-U.S.FishandWildlifeService . U.S. Fish and Wildlife Service. Retrieved from: www.fws.gov/refuge/arctic/carcon.html .	The references have been reviewed.
141.	Caroline	Jasperse	—	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGle.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
142.	Chamie	Brown	University of Florida	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGiple.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
143.	Jacob	Hensch	—	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGiple.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
144.	Madeline	Miller	—	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGiple.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
145.	Daniel	Suman	—	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGiple.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
146.	Kristen	Ranges	—	98022	4	Subsistence Uses and Resources	The DEIS acknowledges that the impacts of future exploration and development activities-like seismic and drilling exploration, air traffic, and infrastructure for transportation of oil and gas-are generally unknown. Environmental groups claim that much information regarding the region (like potential oil reserves) is outdated, which could cause serious miscalculations in the impact statementH Our primary concern with the program's impact on subsistence activities is the effect on caribou-a species currently listed as having a vulnerable conservation status. The longterm effects of the development on caribou reproductive cycles: herd migration activity, and resource availability may cause a significantly diminished opportunity for natives to harvest caribou for subsistence. Further, the presence of oil and gas operations are expected to result in stricter restrictions on firearm discharges and access to lands, greatly diminishing the opportunity for subsistence harvesting by natives. Because caribou are a keystone species, such alterations in subsistence habits pose a threat not only to community tradition and the native subsistence culture, but also to the entire composition of the ecosystem. A representative for a native group has expressed concern that BLM has not adequately considered effects on climate, wildlife, and her peGiple.22 Until a more in-depth study of caribou resilience is conducted, the potential harms to native communities and the caribou population greatly outweigh the economic benefits of oil leasing.	This Leasing EIS utilizes the best available information and will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
147.	Margi	Dashevsky	—	98093	6	Subsistence Uses and Resources	Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on subsistence resources for the Gwich'in and that the subsistence needs of the Gwich'in do not qualify for an 810 hearing under ANILCA, which is required for development that will substantially affect subsistence. Despite the fact that a significant percent of Gwich'in subsistence comes from the Porcupine caribou herd, which the BLM's own analysis finds leasing will affect, they then find that the Gwich'in subsistence will not be affected. This is circular logic, obviously. And I can tell you, the Gwich'in food security will be affected.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.
148.	Sarah	James	—	98099	1	Subsistence Uses and Resources	It's not on their map that BLM drew up Arctic Village hunting ground. We need the whole Arctic National Wildlife Refuge for our hunting ground.	Comment acknowledged
149.	Rhonda	Anderson	—	98138	3	Subsistence Uses and Resources	Another thing is subsistence food makes up nearly 90 percent of diets on the North Slope. Purchasing food from local stores or having them shipped in is expensive and loses nutrition from lack of freshness. How in-depth is the accounting in the IES of what construction will do to caribou herds, migrating birds, fish, mammals, endangered polar bears and their denning habitat?	Mitigation to protect caribou and their use as subsistence resources identified in Section 2, and should prevent declines from the proposal that would require shift to market-based food. In addition, when projects are proposed, site specific mitigation measures may be implemented to ensure the subsistence uses and resources are protected.
150.	Rhonda	Anderson	—	98138	11	Subsistence Uses and Resources	We've had land lost to our nikiptak (ph), our traditional foods, with a drill site a mile from here where we camp for fishing and tutus. For years now, it's lost to development. And it's not just that, it defers migration and brings sickness to our nikiptak, our traditional foods	Loss of subsistence use areas is addressed in the Draft EIS

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
151.	Rhonda	Anderson	—	98138	12	Subsistence Uses and Resources	Many flights of all kinds of choppers this summer disrupting our harvest, and it's frustrating, I tell you	Potential impacts from air traffic are addressed in the Draft EIS
152.	Nora Jane	Burns	—	98157	1	Subsistence Uses and Resources	On the moose, I haven't seen anything on the moose. It's caribou and all the other terrestrial animals. I haven't seen moose. Why haven't you guys put the moose on the list here, too? Because we harvest the moose. And right now we are getting ready to get our three moose allotted for our village, and we have been on restrictions for a long time on the moose because of the habitat, or they either got sick or something. So we have been waiting for the moose for us to be able to harvest the moose without any restrictions from Fish & Wildlife. And then you guys are coming in to do -- to restrict the subsistence.	Potential impacts to subsistence uses within the Coastal Plain, including moose, are addressed in the Draft EIS. See Map 3-30 for depiction of moose use areas overlapping with Coastal Plain
153.	Nora Jane	Burns	—	98157	2	Subsistence Uses and Resources	So the leasing program itself, the conditions -- the lease stipulations and the required operating procedures are definitely not to restrict subsistence any further. All of our required operating procedures require that we allow or that the lessees, if they have a lease, allow for subsistence access. So the lease itself would not restrict subsistence access. MS. NORA JANE BURNS: That's when -- Point Thomson, for example, they told us in the beginning that our hunters will be able to access hunting over there. They are restricted. They can't even go over there to harvest the caribou coming in from the west. So you cannot tell me that there is going to be no restrictions. That's bullshit.	Potential impacts related to potential restrictions to access and subsistence activities are addressed in the Draft EIS.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
154.	Cheryl	Charlie	—	98217	1	Subsistence Uses and Resources	[comment:98217-1; 283.03]The U. S. Government does not consider any Gwich'in communities within Canada when determining who could be 'appreciable affected' by changes to the Porcupine caribou herd (DEIS p. E-3). The US. Government states that the Porcupine caribou herd would experience no major impacts from oil drilling, but provides little evidence to back up this claim. The US. Government almost completely ignores the transboundary impacts that oil and gas drilling in the Arctic Refuge would have on Canada.[comment end]	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
155.	Danny	Kassi	—	98230	1	Subsistence Uses and Resources	The US. Government's Draft Environmental Impact Statement fails to address the environmental and cultural damage that could be caused by oil drilling in the Arctic Refuge. The U. S. Government does not consider any Gwich'in communities within Canada when determining who could be 'appreciable affected' by changes to the Porcupine caribou herd (DEIS p. E-3). The US. Government states that the Porcupine caribou herd would experience no major impacts from oil drilling, but provides little evidence to back up this claim. The US. Government almost completely ignores the transboundary impacts that oil and gas drilling in the Arctic Refuge would have on Canada. I am particularly concerned about the following areas and impacts that oil and gas activities would have on the Arctic Refuge: ANWR - birthing grounds of all migratory birds/animals I am concerned about these issues because: Caribou raise their young in a big free environment i.e. cooler climate during birthing If these issues are not addressed I am worried that: that depletion may occur in the animals/birds from diseases, etc.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
156.	Brook	Brisson	Trustees for Alaska	98270	15	Subsistence Uses and Resources	The Gwich'in people live in fourteen villages extending across northeast Alaska, northern Yukon, and Northwest Territories. Though the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain. ¹⁶²¹ The draft EIS recognizes that many other communities, such as Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole. ¹⁶²² BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users." ¹⁶²³ Despite this, BLM arbitrarily limits its analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie. ¹⁶²⁴ This is egregious, particularly in light of the fact that Canadian users account for the vast majority - in the past up to 85 percent - of the harvest of the Porcupine Caribou Herd. ¹⁶²⁵ BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in the remaining potentially affected communities.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou. Section 810 of ANILCA only applies to subsistence uses by rural Alaska residents, per the definition of "subsistence uses" in Section 803 of ANILCA. The EIS has been revised to more fully analyze transboundary impacts, where applicable.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
157.	Brook	Brisson	Trustees for Alaska	98270	16	Subsistence Uses and Resources	BLM errs by not incorporating and utilizing traditional knowledge when developing the DEIS.	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
158.	Brook	Brisson	Trustees for Alaska	98270	17	Subsistence Uses and Resources	The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, and their knowledge of the Coastal Plain as calving and post-calving habitat should be incorporated in caribou studies. Similarly, BLM mentions Iñupiat traditional knowledge, but does not utilize this knowledge as a resource.1628 Merely recognizing, but not addressing and incorporating available insights from the people who have lived in and relied on the area for a millennia is unacceptable. BLM must obtain traditional knowledge through government-togovernment consultation, ANILCA section 810 hearings, and other outreach efforts, and incorporate findings throughout not only subsistence section of the DEIS, but all other relevant sections of the DEIS.	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
159.	Brook	Brisson	Trustees for Alaska	98270	18	Subsistence Uses and Resources	Additionally, BLM relies on outdated subsistence use data in its baseline analysis, calling its findings into question. BLM relies on data from Steven R. Braund and Associates covering 1996-2006. This data is 13 years out of date as of the time of the DEIS comment period and cannot reasonably be relied upon for purposes of BLM's analysis.	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
160.	Brook	Brisson	Trustees for Alaska	98270	19	Subsistence Uses and Resources	BLM also arbitrarily and improperly limits the scope of its subsistence analysis in the same way it improperly limited the scope of its NEPA and ANILCA 810 analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation. 1629 BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use that could occur from the program.	The scope of the analysis in the EIS, analyzes all phases of an oil and gas program. All future site-specific oil and gas activities will require separate NEPA analysis.
161.	Brook	Brisson	Trustees for Alaska	98270	20	Subsistence Uses and Resources	BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas.	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
162.	Brook	Brisson	Trustees for Alaska	98270	22	Subsistence Uses and Resources	Appendix M provides known levels of subsistence harvest for Kaktovik, Nuiqsut, Venetie, and Arctic Village. ¹⁶³² But analysis of impacts on these resources is substantially lacking, and BLM does not look beyond these four communities. The DEIS provides very little consideration of any resource besides caribou and marine mammals, even though Bering cisco, Dolly Varden, Arctic Char, Dall sheep, ptarmigan, and wood are all considered "major resources" for Kaktovik residents. ¹⁶³³ Moderate resources for Kaktovik also include Arctic cisco, Arctic fox, Arctic grayling, beluga whale, blueberry, broad whitefish, Canada geese, common eider, cranberry, King eider, lake trout, least cisco, long-tailed duck, moose, muskox, polar bear, saffron cod, salmonberry/cloudberry, snow geese, squirrel, walrus, whitefronted geese, wolf, and wolverine. ¹⁶³⁴ Minor resources for Kaktovik include bird eggs, brown bear, halibut, humpback whitefish, red fox, and spotted seal. ¹⁶³⁵ All these resources are biologically diverse and impacts to them from oil and gas will be unique. The DEIS generally lists which resources are most important, but does not tie those assertions to any analysis. All resources listed in Appendix M Subsistence Uses and Resources, including all major, moderate, and minor resources for not only Kaktovik, but the communities of Nuiqsut, Venetie, and Arctic Village must be given meaningful consideration for impacts to subsistence.	The EIS utilizes best available information. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Furthermore, many of the impacts are similar across species. Text has been revised where appropriate to reflect a more comprehensive analysis of effects.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
163.	Brook	Brisson	Trustees for Alaska	98270	23	Subsistence Uses and Resources	Marine mammals used for subsistence include bowhead whale, beluga whale, seal, walrus, and polar bear.1636 All marine mammals listed in the DEIS are either major or moderate subsistence resources for the community of Nuiqsut and Kaktovik.1637 Yet the DEIS provides inadequate consideration of subsistence impacts to these resources beyond mentioning reliance in passing, failing to consider levels of consumption and the importance of harvesting marine mammals to Iñupiaq communities. The DEIS should consider all specific marine mammals, as they present the largest percentage of harvest for subsistence for Kaktovik and Nuiqsut.1638 BLM should incorporate the best available science related to harvest practices for each marine mammal to obtain an accurate baseline from which to consider potential subsistence impacts	The EIS utilizes best available information. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Furthermore, many of the impacts are similar across species. Text has been revised where appropriate to reflect a more comprehensive analysis of effects.
164.	Brook	Brisson	Trustees for Alaska	98270	24	Subsistence Uses and Resources	Similarly, the baseline information for communities' reliance on caribou as a subsistence resource requires further explanation. For example, the DEIS merely states that data is not available for subsistence caribou harvest in Arctic Village, however, the DEIS estimates that 90% of the community's subsistence harvest is caribou and moose and "the assumption is that caribou are source of primary subsistence."1639 BLM must explain how its treatment of this missing or unavailable information comports with the requirements of 40 CFR § 1502.22.	BLM has created Appendix Q which acknowledges data gaps.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
165.	Brook	Brisson	Trustees for Alaska	98270	25	Subsistence Uses and Resources	BLM's analysis on impacts to caribou and associated subsistence use are lacking. Despite acknowledging that oil and gas can have impacts on the Porcupine Caribou Herd, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores best available science, traditional knowledge, and the human rights of the Gwich'in people. Caribou are a major resource for all the listed study communities, and use is high - over 50% of the food source for nine of the 22 caribou study communities.1640 Despite this importance, BLM's overall analysis is general and does not adequately account for the impacts. The DEIS recognizes that calf survival and herd growth are impacted by oil and gas disturbances resulting in reduced numbers to the Porcupine Caribou Herd leading to reduced harvest success among the Iñupiaq, Gwich'in, and Inuvialuit caribou hunters.1641 While the agency makes this finding, BLM fails to quantify, or further analyze these effects. The DEIS should include this analysis.	The subsistence section of the Draft EIS identifies potential impacts to the Gwich'in and does not conclude that there will not be an impact on subsistence resources for the Gwich'in. Based on the Draft EIS's analysis of impacts to caribou (Section 3.3.4), the preliminary ANILCA 810 subsistence evaluation concluded that under all action alternatives impacts to PCH caribou abundance may be affected due to minor displacement of maternal caribou, but due to the mitigating effects of the lease stipulations and ROPs large-scale displacement and consequent large decreases in the abundance of PCH caribou available for subsistence use is unlikely. Accordingly, the ANILCA Section 810(a)(2) requirement for a subsistence hearing was not triggered for any community based on impacts to caribou.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
166.	Brook	Brisson	Trustees for Alaska	98270	27	Subsistence Uses and Resources	Understanding how the Porcupine Caribou Herd will be affected is essential to analyzing subsistence impacts for availability and distribution, which are essential to understanding harvest opportunities. The caribou studies need to incorporate the best-available science in order to accurately discern impacts to subsistence. Further, the BLM must account for the fact that the Porcupine Caribou Herd's range is currently without any major transportation networks and the PCH have not had any previous exposure to oil and gas infrastructure in their calving and post-calving areas. The fact that impacts "are expected to be more intense" for this herd is acknowledged, 1644 but not considered throughout the impacts analysis, including its omission from analysis in the subsistence discussion. There is little evidence that caribou actually habituate to infrastructure, as BLM assumes in the DEIS. Rather, infrastructure could displace caribou availability farther from the project area, and generally alter migratory paths.1645	The subsistence section discusses the potential for disturbance of caribou resulting from development and states, "These responses may be more likely for PCH caribou, as they have had less exposure to development than the CAH." The section also discusses the potential for large-scale displacement and resulting effects to calf survival and herd growth. Additional text regarding their relative exposure to development has been added.
167.	Brook	Brisson	Trustees for Alaska	98270	28	Subsistence Uses and Resources	Subsistence hunters will travel away from industry in order to avoid pipelines and other signs of oil and gas activity while participating in subsistence activities. While the DEIS acknowledges this phenomenon, it provides no meaningful analysis of the extent of avoidance and fails to incorporate it into the subsistence findings. The visual impacts from the production facilities and pipelines would be significant.1646 BLM needs to discern how avoidance of visual impacts will impact subsistence. In addition, subsistence hunters often cite to issues and harm from aircraft disturbance to subsistence hunting. BLM must ascertain whether hunters alter their subsistence activities due to flight schedules and what impacts will result from future, increased traffic.1647	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
168.	Brook	Brisson	Trustees for Alaska	98270	29	Subsistence Uses and Resources	When considering physical barriers to subsistence imposed by infrastructure to subsistence, BLM underestimates these impacts as a result of improper exclusion of infrastructure and activities from its definition of "2,000 acres," thereby limiting consideration of pipelines and gravel mines. BLM must consider pipelines as physical barriers for caribou that will alter their migration patterns and cause avoidance during certain points in their lifecycles. BLM fails to adequately explain how oil and gas infrastructure may alter availability, not just as a result of deflection for animals, but also as deterrence for subsistence hunters.	The subsistence section considers potential impacts of pipelines as physical barriers to both caribou and subsistence users and also addresses potential user avoidance of infrastructure.
169.	Brook	Brisson	Trustees for Alaska	98270	30	Subsistence Uses and Resources	Moreover, the assumption of potential impacts of noise on fish is incorrect and based on a faulty premise that because seismic activity and pile driving will likely occur in winter that there will be no impact. Many fish of subsistence importance, including Dolly Varden and grayling, overwinter in large congregations. If these overwintering locations are not known, these subsistence resources could be significantly impacted by winter exploration and development activities. Overwintering locations for fish of subsistence importance must be identified within BLM's analysis. Moreover, how pile driving, seismic activities, and other winter activities may impact the success of winter fishing should be described in detail.1648 Without this information, BLM's analysis not only of fish, but also of subsistence, is inadequate.	Text has been revised regarding potential impacts to fish from seismic activity and text has been added referencing potential impacts to winter subsistence fish harvesting for Kaktovik residents.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
170.	Brook	Brisson	Trustees for Alaska	98270	31	Subsistence Uses and Resources	Additionally, BLM fails to adequately consider impacts to marine mammals, another important subsistence resource. The DEIS considers all marine mammals, including bowhead whales, seals, and polar bears in the analysis together, making general assertions about how potential air or vessel traffic and seismic exploration might impact subsistence use. As separate species with significantly different biological needs, migration patterns, and impacts, each of these should be considered individually. In addition, development from other projects in the area, such as Liberty and Point Thompson must be considered. BLM needs to provide each marine mammal with an independent consideration using the best available science, as each will have unique impacts due to disturbance from oil and gas activity and subsistence impacts will look different for each species.	The EIS utilizes best available information. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. Furthermore, many of the impacts are similar across species. Text has been revised where appropriate to reflect a more comprehensive analysis of effects.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
171.	Brook	Brisson	Trustees for Alaska	98270	32	Subsistence Uses and Resources	The DEIS does not fully account for the impacts of increased aircraft traffic to subsistence harvesting of caribou and other resources. Aircraft traffic, including plane and helicopter traffic, reduce subsistence harvest opportunities by diverting caribou. Air traffic patterns are difficult to foresee and can cause “acute stress and disruption” to subsistence hunters.¹⁶⁴⁹ When participating in subsistence activities, hunters' success is linked to their food security and cultural wellbeing. In Nuiqsut, aircraft traffic is considered by many to be the most common impact to caribou, and may divert or delay their movements.¹⁶⁵⁰ Here, the DEIS does not currently identify airport locations, which does not allow for meaningful consideration the alternatives. It is impossible to compare and substantively analyze traffic patterns when it is unknown what the flight patterns will look like. Additionally, the DEIS errs by saying aircraft disturbance will not significantly impact caribou when BLM has not identified airport locations, therefore it is uncertain exactly where disturbances will occur. In addition, the DEIS must consider potential air traffic impacts on subsistence activities for birds as well, including the endangered spectacled eider - previously found to be impacted in Nuiqsut.¹⁶⁵¹ The DEIS must fully analyze the impacts of increased air traffic to subsistence hunters by considering hunter avoidance and using the best available science to consider the impacts on caribou and other species.	The EIS utilizes best available information. This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
172.	Brook	Brisson	Trustees for Alaska	98270	33	Subsistence Uses and Resources	Further, BLM has failed to adequately analyze how the fluidity (sharing, trading, bartering, etc.) of resources between communities will be impacted by the leasing program. As sharing and participating in sharing networks is considered a substance activity, BLM must consider how reductions in the ability to share are in fact a reduction to subsistence. The complete loss or reduction of resources in one community may impact the exchange of resources with other communities within the region.	The BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
173.	Brook	Brisson	Trustees for Alaska	98270	34	Subsistence Uses and Resources	The DEIS merely mentions that reduced harvests could disrupt sharing networks, there is no substantive consideration of effects, merely that changes would occur and "disruptions of social connections could thus increase vulnerability in communities."1652 The DEIS should look at specific communities sharing practices and the relative wealth of households to accurately determine impacts from reductions in fluidity of resources. The potential impacts to these social networks should be explained in much greater detail; simply acknowledging it is insufficient to serve as the required NEPA analysis.	BLM uses the best available information to develop the EIS to describe the environment and consequences of development as described by the scenario. This information includes local and traditional knowledge. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
174.	Brook	Brisson	Trustees for Alaska	98270	35	Subsistence Uses and Resources	The DEIS does not sufficiently consider the compounded impacts to subsistence hunters. When subsistence users are unable to engage in subsistence activities or their opportunities are limited, their ability to pass on traditional knowledge about subsistence activities also becomes limited. As discussed above, opportunities or subsistence areas may become limited because of infrastructure, avoidance by subsistence hunters, and reduced subsistence resources. The initial reduction of traditional use areas will limit the ability to pass on traditional knowledge to younger generations and traditional use and knowledge of the use areas will be lost. The DEIS should measure this impact as long-term or permanent, and consider the loss of knowledge as a significant subsistence impact.	The cumulative impacts section acknowledges the potential compounded impacts of “reduced opportunities for participation in subsistence harvesting, processing, distribution, and celebrations resulting from decreased harvests, “which “could have potential negative effects on culture by weakening social ties and knowledge of cultural traditions.”
175.	Brook	Brisson	Trustees for Alaska	98270	36	Subsistence Uses and Resources	Additionally, in several instances, including within Appendix M, BLM identifies the annual cycle of subsistence resource harvesting.1653 BLM does not, however, identify how these resources may be impacted by oil and gas activities associated with this leasing program during these particular times of year. BLM should articulate in detail how the leasing program will impact resources and practices during each month.	Alternatives do not provide enough detail about project activities to analyze potential impacts on a month-to-month basis. (e.g., data on the timing of helicopter traffic associated with the leasing program are not available). Text has been revised to ensure that in cases where data on the timing of development activities are available, potentially affected subsistence activities are cross-referenced.
176.	Brook	Brisson	Trustees for Alaska	98270	37	Subsistence Uses and Resources	perceived changes in fish and wildlife health due to development, may affect subsistence.1655 Further, harvest cycle analysis must include and account for climate change impacts to the subsistence harvest and resulting limits to subsistence resources availability. For example, BLM must consider how surveying for ice road season damage by helicopter in June may impact caribou hunting.	Alternatives do not provide enough detail about project activities to analyze potential impacts on a month-to-month basis. (e.g., data on the timing of helicopter traffic associated with the leasing program are not available). Text has been revised to ensure that in cases where data on the timing of development activities are available, potentially affected subsistence activities are cross-referenced.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
177.	Brook	Brisson	Trustees for Alaska	98270	38	Subsistence Uses and Resources	Finally, BLM relies heavily on the experiences of Nuiqsut to describe likely circumstances for communities reliant upon the Arctic Refuge. In doing so, however, BLM fails to articulate the major differences temporally and physically between these two contexts. First, Nuiqsut is being significantly affected as a result of being surrounded by oil development.1656 BLM cannot rely on other EISs, which incorrectly minimize subsistence impacts to Nuiqsut, as a way of shirking its NEPA obligations to fully and accurately consider the potential impacts to subsistence uses on the Coastal Plain.1657 Second, development around Nuiqsut is ongoing and the full scope of impacts have yet to be realized. Even so, the impacts from the handful of projects that are starting to surround the community are already having significant impacts to subsistence users' ability to continue their way of life. BLM should not assume hunters have or will successfully adapt to resource development, especially since there are a number of large projects around Nuiqsut that are anticipated but have not yet been constructed. These include, among others, Greater Mooses Tooth Two, Willow, and Nanushuk.	As the commenter states, Nuiqsut is the most heavily impacted community on the North Slope and is surrounded by oil and gas development, and therefore referencing the experiences of Nuiqsut when predicting impacts likely to occur under development of the program area is appropriate and is primarily used to predict impacts to Kaktovik, the community which would be most directly impacted by the proposed development. The EIS does not solely reference the results of other EISs when describing impacts to Nuiqsut, but rather primarily references subsistence and impact monitoring studies. The EIS also acknowledges that despite adaptation in terms of continued harvests, Nuiqsut continues to experience impacts of development which affect their overall subsistence way of life. Text has been added to clarify that adaptations to development have limits and do not suggest a lack of impacts.
178.	Brook	Brisson	Trustees for Alaska	98270	39	Subsistence Uses and Resources	Finally, the geography and resources relevant to the NPR-A and Coastal Plain are very different, and affected communities are located in different landscapes with very different resource patterns. An analysis specific to communities relying upon the resources of the Arctic National Wildlife Refuge is necessary.	The EIS does analyze specific communities relying on the resources in the Arctic National Wildlife Refuge.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
179.	Brook	Brisson	Trustees for Alaska	98270	40	Subsistence Uses and Resources	the DEIS does not include cumulative effects from the Point Thompson and Liberty developments. The proposed action must be considered in the context of current development. Both Point Thompson and Liberty will have impacts on bowhead whales, seals, and polar bears.1658 The DEIS should consider the cumulative impacts on bowhead whale hunts, whale availability, changes in migratory patterns and deflection of bowhead whales from development and increased traffic. BLM must also consider the potential for Liberty construction to interfere with Kaktovik subsistence harvest of caribou during construction as projected by the project's EIS.1659 Any disruption of the Porcupine Caribou Herd from these development projects would likewise disrupt harvest patterns for Gwich'in communities, as well. Liberty found that the additive effects on polar bears may result in moderate to major effects on the species.1660 Point Thompson also found a loss in critical habitat for polar bears.1661 As a moderate subsistence source for both Kaktovik and Nuiqsut, polar bear must be considered in the cumulative for subsistence. The proposed action must be considered the context of current development including the Point Thompson and Liberty projects and their impacts on marine mammal subsistence availability.	Onshore development and development in state and federal waters are considered in the Cumulative Effects Analysis (see Table F-1).

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
180.	Brook	Brisson	Trustees for Alaska	98270	41	Subsistence Uses and Resources	Additionally, in describing impacts of oil and gas development, BLM focuses on impacts resulting from oil and gas development activities just on the Coastal Plain. There is no discussion of the reasonably foreseeable future actions of a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline and oil and gas development in the Colville-Canning area and Alpine area. BLM completed failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut. BLM needs to explicitly lay out these foreseeable projects and impacts.	The cumulative impacts section has been revised to reflect the projects listed in Appendix F.
181.	Brook	Brisson	Trustees for Alaska	98270	42	Subsistence Uses and Resources	BLM also assumes that hunters would "adapt, to varying extents, to the changes occurring around them."1662 How BLM foresees hunters adapting should be described. It is also necessary to consider that all hunters may not be able to adapt because of factors like increased cost of travel to more distant subsistence use areas. The DEIS also recognizes that some subsistence hunters choose not to use roads. Not using roads is a subsistence hunter's prerogative, and BLM must not only mention these hunters, but consider the effects on hunters who choose to not utilize roads for subsistence practices. BLM should analyze and describe the limitations of adaptation to changed subsistence practices, resources, and conditions on the landscape.	The EIS includes discussion of limits to adaptation including higher vulnerability of certain households to change. Text has been added to address limitations to hunter adaptation and differences vulnerability between households and individuals.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
182.	Brook	Brisson	Trustees for Alaska	98270	43	Subsistence Uses and Resources	BLM also fails to accurately describe how subsistence uses and resources will be impacted by a changing climate. BLM should include an analysis of how subsistence resource abundance and habitat quality have been impacted by a changing Arctic. Relatedly, BLM must discuss how a changed climate is expected to impact subsistence practices in the future. These changes should be coupled with the cumulative industrial impacts of oil development on the North Slope and Arctic Ocean. Currently, BLM's cumulative analysis consists of the broad statement that climate change "could influence the rate or degree of potential impacts."1663 In addition, the baseline analysis only finds that "climate change could contribute to resource availability caused by development in and around the program area, further reducing their availability to subsistence users."1664 These statements are too broad and general to capture the real impacts that are already happening across the North Slope of Alaska. As discussed elsewhere in these comments, the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals. Instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change, BLM instead relies on ambiguous statements to merely acknowledge potential impacts. BLM's analysis should incorporate the best available climate science, include site specific analysis for all communities. BLM must analyze impacts to communities along the migratory path of the Porcupine Caribou Herd who will experience reduced subsistence harvest opportunities if the migratory path of the herd is altered or shifts. BLM's current climate change cumulative impacts analysis lacks rigor and fails to meaningfully account for climate change.	Cumulative impact analyses have been revised as suggested where applicable. In addition, the climate change discussion has been expanded upon. This Leasing EIS will not result in the authorization of any on-the-ground activities, and analysis is based on a hypothetical development scenario as there are no specific project proposals to analyze. The cumulative analysis anticipates development to occur as described in the hypothetical development scenario.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
183.	Brook	Brisson	Trustees for Alaska	98270	44	Subsistence Uses and Resources	BLM does not address the potential risk of contamination from potential oil spills on subsistence activities. Mentioned as a potential risk in all scenarios, 1665 the impact of a large spill would be widespread is not included in the cumulative impacts analysis. The size of proposed spills and can have effects on marine wildlife and both smaller and larger spills need to be considered in the DEIS, especially during whaling season and bowhead migration times. Onshore spills may contaminate hydrological systems, tundra and vegetation, and in turn the wildlife and people that rely upon these ecological systems. Spill trajectories and risk must be weighed in the cumulative sense.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
184.	Brook	Brisson	Trustees for Alaska	98270	45	Subsistence Uses and Resources	Although BLM claims some impacts to subsistence resources, such as caribou, can be mitigated with timing and surface limitations, BLM acknowledges that mitigation measures can merely minimize, and cannot eliminate impacts to subsistence. BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability.	Text was added discussing limitations of mitigation in eliminating or reducing impacts to subsistence.
185.	Brook	Brisson	Trustees for Alaska	98270	47	Subsistence Uses and Resources	For instance, Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements. 1666 However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what is meant by "major construction activity" and also noteworthy that even that protection is subject to waiver.)	Major construction activity has been defined in the glossary. Operators are required to submit a written request for an Exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
185. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

S. Public Comments and BLM Responses (Subsistence Uses and Resources)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
186.	Brook	Brisson	Trustees for Alaska	98270	167	Subsistence Uses and Resources	The discussion of [shipping and icebreaking] noise impacts in the subsistence section of the DEIS similarly assumes that the ROPs will be highly effective in mitigating impacts,1938 and thus the DEIS understates the potential adverse effects. Where subsistence activities involving marine mammals are expected to be disturbed, the discussion focuses on whales and mentions other marine mammals only in passing.1939 This is inadequate. For example, BLM predicts the effects of noise disturbance on seals will be temporary (less than 5 years), with no lasting demographic effects.1940 Presumably, however, displacement of the majority of seals from the project area in response to noise would have a notable impact on subsistence activities. The discussion should be revised to provide a more accurate analysis of shipping and icebreaking noise impacts on subsistence near the program area and along the marine shipping route.	The marine mammal section does not conclude that noise associated with vessel traffic would result in displacement of the majority of seals but that displacement of seals would be localized and temporary, with the exception of STPs where displacement may be more widespread. Reviewed marine mammal section and edited discussion of potential impacts to seal availability for Kaktovik harvesters.
187.	Brook	Brisson	Trustees for Alaska	98270	214	Subsistence Uses and Resources	BLM's analysis of water quality fails to consider how oil and gas development could affect the safety of subsistence resources. The contamination of subsistence resources because of poor water quality and the risk it poses to the consumers of subsistence resources should be analyzed within the document.	The subsistence analysis must rely on the wildlife chapter conclusions regarding how changes to water quality would affect subsistence resources. The potential for contamination to the marine, riverine, and terrestrial environment, and resulting impacts to resource availability for subsistence users, are discussed under "Contamination." Wildlife sections have been reviewed and The text has been revised to reflect potential for contamination of individual resources.

S.3.41 Terrestrial Mammals

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Karina	Marzban	—	18201	2	Terrestrial Mammals	The impacts of oil leasing on caribou will extend far beyond the coastal plain to include the entire Refuge and a large area of northwest Canada where the herd ranges. The EIS must address all aspects of how the herd and this large area would be impacted.	Additional maps of caribou herds were added.
2.	Russell	Oates	—	31550	1	Terrestrial Mammals	Failure to include and adequately account for the distribution of the pipeline corridors as part of the development footprint in the caribou calving area is a fatal flaw to this EIS. Numerous studies (several of which you have cited) have demonstrated avoidance behavior of pipelines by cows and calves. In the restricted confines of the calving area available to this herd, a spider web of pipelines will spell long-term disaster.	The distribution of future pipelines is not known. The reasonably foreseeable development section provides likely scenarios. If leasing occurs, future development plans will have to go through the NEPA process.
3.	Withheld	Withheld	—	48698	3	Terrestrial Mammals	A FULL assessment of impacts on caribou movements, natality, mortality, nutritional status should be included, as well as mitigation options which ensure the continuing survival of the herd at comparable population densities.	The EIS discusses the impacts on caribou from the alternatives.
4.	Malcolm	Boothroyd	—	54092	6	Terrestrial Mammals	The DEIS understates the importance of the Coastal Plain to the Porcupine caribou herd, based on a designation of 'primary calving areas' (see page 2-13), that arbitrarily excludes areas used less than 40% of years. The DEIS fails to address the importance of the Coastal Plain as post-calving habitat. The DEIS suggests that drilling would not cause the Porcupine caribou to decline, but does not support this claim with any modelling or quantitative analysis. The absence of quantitative analysis of impacts on the Porcupine caribou herd, and the failure of the BLM to envision a scenario where the herd falls into decline is one of the most egregious oversights of the DEIS.	Section 3.3.4 and Appendix E have been updated for the Final EIS. More specific, quantitative analysis would occur during project-specific NEPA analyses.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Pamela	Mayne	—	54228	2	Terrestrial Mammals	Unlike the oil development areas surrounding Prudhoe Bay and in the northeastern National Petroleum Reserve, the coastal plain in the Refuge is narrow, only 20-25 miles between mountains and coast. The DEIS fails to take that difference into account when assessing the impact of oil infrastructure on caribou movements, wildlife corridors, and habitat availability.	Text on the narrowness of the Coastal Plain in this area was added to section on differences between the CAH and PCH.
6.	Chad	Hansen	—	56842	4	Terrestrial Mammals	Many of the proposed requirements to protect caribou are drawn from requirements to protect caribou in the National Petroleum Reserve—Alaska (NPR-A) in northwestern Alaska. The NPR-A is not the same as the refuge, however. Specifically, the refuge's Coastal Plain is much narrower – with the entire Coastal Plain of critical importance to caribou life cycles – so protective measures used in the NPR-A may not be effective.	Text on the narrowness of the Coastal Plain in this area was added to section on differences between the CAH and PCH.
7.	Withheld	Withheld	—	57282	3	Terrestrial Mammals	Section 3.3.4 argues that drilling is well outside the caribou herd's range. More robust data collection on this is needed.	The Draft EIS clearly indicates that both the Central Arctic Herd and the PCH use areas open to leasing under the alternatives.
8.	Withheld	Withheld	—	59376	19	Terrestrial Mammals	Please analyze: (1) Increased bear morality from self defense of workers on the coastal plain. (2) Decline of big game hunting opportunities for Americans that may result from declines in species, their habitat, and prey. Alaska is the last place we can go to hunt for really any species, including big game, and refuges are critical places for the species to recover. Both the Central Arctic and Porcupine Caribou herds use the project area and I have heard that only the Porcupine is not in decline.	Defense of life and property mortality is discussed.

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Withheld	Withheld	—	59729	1	Terrestrial Mammals	It fails to fully assess the significant impacts on caribou, especially when they are calving and raising young. It fails to address the impact of a declining caribou population on the area.	Impacts on calving caribou are discussed relative to alternatives.
10.	Holly	Hemingway	—	59736	1	Terrestrial Mammals	The DEIS fails to fully assess the significant impacts oil leasing and development would have on caribou migration and calving and raising their young.	Impacts on calving caribou are discussed relative to alternatives. The area gets little use during spring and fall migration.
11.	Mary	Harte	—	65931	2	Terrestrial Mammals	fully assess the significant impacts oil leasing and development would have on caribou, especially when caribou are most vulnerable to disturbance—during critical times of calving and raising young.	The potential impacts on calving caribou are discussed.
12.	Karen	Kunde	—	67503	1	Terrestrial Mammals	The EIS states “few data are available on the effects of noise and light on caribou.” This type of data, especially pertaining to caribou cows with calves, is needed before this project proceeds.	The EIS discusses relevant research on impacts

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Jenny	Rowland-Shea	Center for American Progress	67555	3	Terrestrial Mammals	The DEIS also suggests that 49 percent of the coastal plain that could be offered for leasing is sensitive calving grounds for porcupine caribou, a herd whose long-term health is inextricably linked to the Arctic Refuge. This statistic, however, vastly undercounts the value of the coastal plain to the caribou, who use virtually 100 percent of the area during calving and post-calving seasons—a statement supported, in part, by the review's own maps of the herd's historic movements. Even with the downplayed numbers, the assessment does acknowledge that activity that moves the herd away from the coastal plain would be detrimental, citing a study predicting an 8 percent decline in calf survival due to displacement. While the DEIS acknowledges that the potential for disturbance and displacement of caribou could cover up to 633,000 acres—40 percent of the coastal plain—it offers a wholly insufficient solution to mitigate the impact: suspension of “major construction activities”—but not drilling—for a single month of the year. This is particularly problematic given the National Oceanic and Atmospheric Administration's 2018 Arctic Report Card, which found that overall, Arctic caribou populations have decreased by more than 50 percent in the past 20 years.	The Draft EIS discusses the use of calving distribution of the PCH in different years and acknowledges that some calving occurs in many parts of the area. Suspending drilling for month is just one of multiple stipulation in one of three alternatives. Information on North American population trends was added.
14.	Christopher	Lutz	—	67596	4	Terrestrial Mammals	Porcupine caribou herd. The document also failed to look at the full range of areas important to the herd's health.	The EIS shows caribou distribution by season. Additional maps were added.
15.	Bill	Sherwonit	—	67644	3	Terrestrial Mammals	many of the proposed actions to protect caribou are adapted from requirements in the NPR-A. However, there are substantial differences in the two areas and how the caribou use them. Protective measures in the Arctic Refuge must be based on the best available science for the coastal plain and its wildlife, not projections from NPR-A or elsewhere.	Research from the PCH and the Refuge are discussed in the Draft EIS

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
16.	Armando	Garcia	—	67655	3	Terrestrial Mammals	The agency cannot gauge the effects on the Porcupine Caribou Herd without complete and accurate information. This includes addressing gaps in current Western scientific data and incorporating the traditional knowledge of the peoples who have practiced subsistence living in the area since time immemorial.	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
17.	Withheld	Withheld	—	67956	2	Terrestrial Mammals	The Refuge also fulfills US-Canada treaty obligations related to the conservation of the Porcupine Caribou herd. The agency must detail how exactly it will fulfill those treaty obligations if it allows oil and gas development in the region.	All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices.
18.	Withheld	Withheld	—	68965	75	Terrestrial Mammals	46. Chapter 3; section 3.3.4, pages 3-103 to 3-122. Terrestrial Mammals. The Introduction to the draft EIS and Appendix B, the hypothetical development scenario, establish expectations about the likely structure and content of subsequent analyses of different environmental resources affected by the program. The analysis of effects for Terrestrial Mammals is laudable and noteworthy in that it most closely approaches fulfilling these structure and content expectations. Nonetheless, it also omits critical aspects of analysis, omissions similar to those found in most other analyses of effects to other resources (please see my general comment (2) above). In particular, potential impacts from the “abandonment and reclamation” phase of the program are not analyzed, and except for the inclusion of qualitative duration information in Table 3-19, little information is provided about temporal aspects of program effects.	The analysis was revised to include reclamation phase and assumptions of the hypothetical development scenario.

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19.	Withheld	Withheld	—	68965	77	Terrestrial Mammals	47. Chapter 3; section 3.3.4, page 3-108. Terrestrial Mammals. The description of carnivore baseline conditions on page 3-108 includes the following statement: "Increasing predator populations, with the associated higher predation rates on prey populations (especially migrant birds), has been a perennial concern around the North Slope oilfields (Day 1998)." The subsequent analysis of program effects on mammals, however, does not include the following impact mechanism that was included in the effects analysis for birds (pg. 3-92); "attraction of predators and scavengers (including both mammals and birds) to human activity or facilities, with subsequent changes in predator abundance." Please explain why this impact mechanism was not considered relevant to the analysis of program effects on mammals.	The effect of anthropogenic food on red foxes was discussed.
20.	Withheld	Withheld	—	68965	79	Terrestrial Mammals	50. Chapter 3; section 3.3.4, pages 3-117. Terrestrial Mammals. Approximately 500 line miles of seismic data are expected to be collected, with receiver lines spaced 330 to 1,320 feet apart. Please explain how this relates to the following information from Appendix B, pg. B-12: The BLM estimates that approximately 900 square miles would be surveyed by 3D seismic vehicles.	Text has been revised for clarity regarding line miles vs. square miles. Discussion of seismic effects was updated for different types of seismic activity. Site-specific NEPA analysis would be done for any proposed seismic explorations.

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21.	Withheld	Withheld	—	68965	82	Terrestrial Mammals	54. Chapter 3; section 3.3.5, page 3-135. Marine Mammals. What effects would other aspects of the program described in Appendix B such as a construction and operation of a seawater treatment plant, a barge landing, and gravel staging, mining, and stockpile areas (pg. B-12) have on loss and alteration of polar bear habitat, including designated critical habitat? Please see my general comment (2) above regarding Appendix B, and expand the analysis of effects common to all action alternatives to include consideration of all the reasonably foreseeable activities described in Appendix B that have the potential to affect each marine mammal species present in the program area.	Direct loss and alteration of habitat were discussed in the Draft EIS, but additional text has been added in the Final EIS to further quantify the area of designated critical habitat units potentially affected, and to better describe potential habitat effects from the STP and barge landing.
22.	James	Warren	—	36638	2	Terrestrial Mammals	in regard to all terrestrial mammals, the Draft EIS reveals an interesting point about the so-called “only 2000 acres” argument. Here you show that the actual footprint is much, much larger than 2000 acres and that it will in fact make a total displacement and disturbance of over 600,000 acres: Using the hypothetical schematic anchor-field footprint (one CPF and 6 radiating 8-mile access roads to 6 drill pads, including an STP pad and a 30-mile access road, totaling 750 acres), the BLM calculated estimates of the area within 2.49 miles for potential displacement of calving caribou. Using these schematic footprints and extrapolating to a 2,000-acre maximum gravel footprint, it estimated the total acres of potential disturbance and displacement is 633,000 acres; however, this number would vary with different road and pad scenarios, and some portion of this area could be overlapping the buffer from other development, outside of the program area, or in the ocean. This potential displacement area is compared with areas available for lease under each alternative.	The footprint refers to the area directly impacted and is limited to 2000 acres of gravel deposition. There will also be indirect impacts associated with gravel roads and pads such as potential disturbance of caribou. These indirect impacts will extend out some distance from the gravel footprint and thus impact a larger area. These distinctions and impacts are discussed in the EIS.

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23.	Withheld	Withheld	—	68965	80	Terrestrial Mammals	51. Chapter 3; section 3.3.4, pages 3-117. Terrestrial Mammals. Appendix B, pg. B-12 states: Seismic operations would be accompanied by ski-mounted camp buildings towed by bulldozers or other tracked vehicles. There could be two to three strings with four to eight modular buildings in each string. Camps are assumed to move weekly. Please include a preliminary analysis of the potential effects on terrestrial mammals from camp activities. I understand a separate environmental analysis of the seismic exploration program is underway. Nonetheless, the details provided in Appendix B of this draft EIS for the entire program contains sufficient information for a more comprehensive preliminary analysis here of seismic exploration effects.	Additional text on the additional vegetation impacts from camp moves compared to seismic trails was added and impacts of winter seismic activity to terrestrial mammals was discussed. The primary impacts will be disturbance of large mammals in the area during winter (muskoxen, wolves, wolverines, and denning grizzly bears) and direct mortality or impacts to habitat and movements of small mammals. Both seismic camps and other seismic activities are likely to disturb large mammals and impact small mammals through compaction of snow and vegetation changes.
24.	Eric	Walsh	Government of Canada	74346	43	Terrestrial Mammals	Boulanger et al. 2012 - ZOI open pit mines in Bathurst range 6.8-8.7 miles (July-mid Oct). Larger response related to fine dust deposition in open, tundra habitats.	A detailed analysis of fine dust deposition in open tundra habitats relative to caribou avoidance distances around different types of industrial sites is outside the scope of analysis of the EIS.
25.	Chandra	Turner	Inuvialuit Game Council	75904	19	Terrestrial Mammals	Neither is there any discussion of any Inuvialuit traditional knowledge of polar bears, such as the Joint Secretariat 2015 book Inuvialuit and Nanuq: A polar bear traditional knowledge study.	Documents by the Joint Secretariat (2015 and 2017) have been added as citations in Section 3.3.5 of the Final EIS.
26.	Peter	Stern	—	69296	21	Terrestrial Mammals	Page 3.23 Section 3.2.4 This section identified the width of the coast plan at the narrowest point. This is an important measurement that is left out of discussions comparing behavior of the PCH and the Central Arctic Herd (CAH). The area predominantly used by the CAH is at least 3 times wider than the ANWR coastal plain. This means the CAH animals have much more area to use in avoiding conflicts with development.	Additional text has been added for clarity.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Peter	Stern	—	69296	24	Terrestrial Mammals	Pages 3-71 says ice roads effects on tundra vegetation can take 20 years to recover. This shows these roads do have a long term affect on vegetation that caribou feed on which can impact how the animals move and use the coastal plain resources	Table 3-19 has been updated.
28.	Peter	Stern	—	69296	25	Terrestrial Mammals	Page 3-72 Construction. This section acknowledges dust from gravel road construction can affect vegetation up to 328 feet from the edge of the road/ per side for a total of 656 ft of affect vegetation. If the vegetation affects is less than desirable for feeding, that can have a substantial affect of caribou movement and possible over grazing of other areas.	About 1% of the program area is expected to be within 328 feet of gravel roads and forage will still be available within this area.
29.	Peter	Stern	—	69296	27	Terrestrial Mammals	Page 3-80 Discusses gravel spray up to 328 ft to the side of the road. It acknowledges negative impacts on water and vegetation but has no proposed solution or monitoring. Caribou may be faced with less than desirable surface water for drinking.	Surface water is not expected to be limiting for caribou.
30.	Peter	Stern	—	69296	28	Terrestrial Mammals	Pages 3-82 "Fugitive dust from vehicle traffic could also increase local turbidity in streams around gravel infrastructure. Dust effects on aquatic habitats and species would be long term and adverse." There is no mention of fugitive dust effect on vegetation caribou depend on for feeding.	The effect of dust on mammal forage is discussed in Section 3.3.4.
31.	Peter	Stern	—	69296	29	Terrestrial Mammals	Page 3-94 Habitat Loss and Alteration recognizes ice and winter roads may damage vegetation substantially and can only estimate 2-3 years recovery for grasses while tussocks and woody shrubs can take much longer to recover. 2-3 years for grasses means caribou may have to look for other areas for feeding which could offer more opportunity for conflicts with areas under development with permanent gravel roads and pads.	The effect of ice roads on vegetation is discussed in Section 3.3.4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Peter	Stern	—	69296	34	Terrestrial Mammals	Page 3-113 "Potential disturbance could result in behavioral responses, such as reduced foraging rates, increased movements, and energetically costly flight responses, potentially displacing animals from suitable habitat (Shideler 1986; Cronin et al. 1994; Murphy and Lawhead 2000; Murphy et al. 2000)." Besides behavioral responses, the gravel road construction and road operation may cause dust to impact the quality of vegetation up to 328 feet either side of roads or from pads. This damage will likely cause reduced foraging rates.	The effect of dust on mammal forage is discussed in Section 3.3.4.
33.	Peter	Stern	—	69296	37	Terrestrial Mammals	Page 3-104 "Caribou of the PCH and CAH generally spend the winter in or south of the Brooks Range (Griffith et al. 2002; Lenart 2015a; Nicholson et al. 2016), where the winter ranges of the two herds often overlap substantially, " The statement about "overlap substantially" is wildly over stated.	The multi-year winter distribution of the CAH has high overlap with the multi-year winter distribution of the PCH. The amount of overlap varies annually but can be high (Prichard 2015; Prichard et al. in review). Prichard, A.K. 2015. Section 9. caribou distribution, habitat use, and herd fidelity. In Shell onshore/nearshore environmental studies, 2015. Macander, M.J., G.V. Frost, and S.M. Murphy (eds). Final Report Prepared by ABR—Environmental Research & Services. 344 pages
34.	Peter	Stern	—	69296	38	Terrestrial Mammals	Page 3-106-107 discussion about calf mortality fails to mention river crossings as a cause. When the calving occurs east of the main calving area due to late arrival or poor winter conditions, stream crossings become a bigger problem as the herd moves west. Use of snow fields in the foot hills for insect avoidance is often followed by movement directly north to the coast. It is vitally important that roads and pipelines don't impede that movement. As this section mentioning the condition of animals when they leave the north slope is critical to the next year's calf population.	The timing of river breakup is mentioned in Section 3.3.4 under the Climate Change heading.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Peter	Stern	—	69296	39	Terrestrial Mammals	Page 3-107 " Since construction of the Alaska North Slope oilfields, the CAH has been exposed to some level of development for about 40 years (Cameron et al. 2005). During most years since 2004, a portion of the CAH has moved through the program area during the summer insect season (Map 3-22 in Appendix A; Lenart 2015a; Nicholson et al. 2016; Prichard et al. 2017)." This section again fails to discuss the very large difference between the width of the north slope coastal plain in most of the CAH area compared to the very narrow coastal plain in the ANWR area. This means it is harder for the animals to avoid areas under development or the effect of roads or pipelines in that 1002 area.	Additional text has been added for clarity.
36.	Peter	Stern	—	69296	80	Terrestrial Mammals	Page J-31 the BLM source GIS 2018 is credited for tabled about caribou historical use of calving areas. The true source of this data needs to be identified. There is no way this data came from a single year study.	The sources of figures have been added.
37.	Peter	Stern	—	69296	89	Terrestrial Mammals	The poor quality of much of the data on the Porcupine Caribou Herd (PCH) and the constant comparison to the Central Arctic Herd (CAH) should force BLM to ensure US Fish and Wildlife is required to conduct new studies on the PCH behaviors, herd health and population numbers. If the life of the developed areas will in fact be 50 years and remediation is to take place, good data will be necessary to measure effects on the PCH.	The PCH has been monitored and studied by the ADFG and USFWS.
38.	Peter	Stern	—	69296	92	Terrestrial Mammals	In calving areas where activities will be subject to time limited operations, BLM needs to explain how this will be managed.	The requirement/standard will be managed by the BLM Authorized Officer with support from BLM staff.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Peter	Stern	—	69296	93	Terrestrial Mammals	If subsistence hunting by Kaktovik residents increases due to road access, BLM needs to explain how this will be monitored and handled if it changes movement patterns of the PCH.	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
40.	Peter	Stern	—	69296	99	Terrestrial Mammals	Page 3-194 The population changes in the PCH are shown estimated to be climate based. The impacts caused by oil field development can only serve to exacerbate these fluctuations.	The impacts on caribou populations are discussed in Section 3.3.4.
41.	Mark	Alessi	—	69302	2	Terrestrial Mammals	Safeguards must be established to ensure that pregnant Porcupine Caribou are not disturbed on ANWR's Coastal Plain during the months of May thru July when they give birth.	Section 3.3.4 discusses potential impacts on calving caribou.
42.	Linda	Serret	—	69357	12	Terrestrial Mammals	Please analyze: (1) Increased bear morality from self defense of workers on the coastal plain. (2) Decline of big game hunting opportunities for Americans that may result from declines in species, their habitat, and prey. Alaska is the last place we can go to hunt for really any species, including big game, and refuges are critical places for the species to recover. Both the Central Arctic and Porcupine Caribou herds use the project area and I have heard that only the Porcupine is not in decline.	Section 3.3.4 discusses the potential for defense of life and property mortality of grizzly bears as well the potential for bears accessing anthropogenic food sources.
43.	Withheld	Withheld	—	69634	2	Terrestrial Mammals	The DEIS also fails to fully assess the significant impacts of oil leasing and development on caribou, especially during critical times of calving and raising young. Oil leasing and development on the Coastal Plain would diminish caribou populations, with significant impacts over a vast reach of Alaska and Canada, affecting ecosystems and harming indigenous people.	Section 3.3.4 discusses the potential impacts of alternatives on caribou during calving and post-calving periods.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
44.	Becky	Long	—	69710	20	Terrestrial Mammals	Sensitive Habitat- The draft estimates that only 49% of the coastal plain is sensitive habitat to the caribou. This is inaccurate. The herd uses pretty much all the coastal plain during the calving and post calving. BLM's own Map 3-21 shows calving and post calving area covers most of the plain. The first three weeks after birth, the calves are totally dependent on mother's milk. If the cows are in poor condition, then the calves are weakened. The first month there is usually 25% mortality due to birth defects, poor nutrition, and predators (golden eagles, grizzly and wolves). Based on biological survey data, calf survival is 8 to 11 % greater if they are born in the 1002 area. To put it another way, the poor diet quality on the Canadian coastal plain with a higher density of predators would substantially increase the calving mortality by 19% on top of the 24%. In the last 30 years, only three times have the caribou calved in the Canadian coastal plain. There is no evidence that calves or cows can compensate later in the summer for poor late June physical condition. If animals are in poor condition in the fall, then pregnancy can be reduced, the age of the first reproductive cycle may be delayed, and winter mortality increases. Central Arctic Caribou Herd research shows that there is a measureable avoidance by cows and calves of a zone within 4 kilometers of roads and pipelines and other infrastructure. The impacts of leasing on the coastal plain would cause overall population decline as a result.	Section 3.3.4 designates primary calving habitat but acknowledges that other areas are also used for calving. The PCH has calved in Canada in 8 of the 12 years from 2000 to 2011.
45.	Jennifer	Bradford	—	69764	1	Terrestrial Mammals	The DEIS fails to fully assess the significant impacts oil leasing and development would have on caribou, especially when caribou are most vulnerable to disturbance—during critical times of calving and raising young.	The potential impacts on calving caribou are discussed in Section 3.3.4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Withheld	Withheld	—	70934	34	Terrestrial Mammals	Page 3 - 108 a) Muskoxen, This narrative implies a gradual decline in Muskox numbers in the Arctic Refuge which is not accurate. There was a nearly 90% population decline in Muskoxen in the Arctic Refuge in the winter of 2004- 2005. The likely cause of this decline was early winter rains and icing. Prior to this period Grizzly bears were not known to regularly predate on Muskoxen in this area.	The USFWS RCCP described the muskox population trend "The population in the Refuge increased rapidly from 1978 to 1985 and was relatively stable through the late 1990s (Reynolds et al. 2002a) (Figure 4-7). The population range expanded as some groups left the Refuge and moved west into north central Alaska and east into Yukon, Canada. Abundance of muskoxen declined rapidly between 1998 and 2002, and numbers remained very low (1-44) in 2002–2010."
47.	Withheld	Withheld	—	70934	35	Terrestrial Mammals	Page 3-116 in regards to aircraft, While pilots might intend to fly at higher altitudes, in practice especially during foggy periods, aircraft generally do not go above 500 ft. Without strict regulations and enforcement low-level flight will be a common occurrence.	Industry flights can be monitored. A safety exclusion for flight altitude restrictions is necessary due to frequent changes in the weather.
48.	Julie	Bannister	Wildness Watch	71451	1	Terrestrial Mammals	Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which would have significant ramifications over a vast area of Alaska and Canada, and these effects would persist beyond the estimated 130 years of exploitation. The DEIS fails to address this reality and its effects on indigenous people.	The effects of the different alternatives on caribou herds was discussed in Section 3.3.4 using best available information.
49.	Aidan	Castle	—	71631	1	Terrestrial Mammals	A key area of my concern with the current Draft EIS is that it substantively equates the Porcupine Caribou Herd with the Central Arctic Herd. I feel that such a comparison is invalid, as the herds are so different from one another. For example, the PCH is significantly larger and denser than the CAH. In order to validly assert that the PCH will be robust to disturbances from oil and gas extraction because the CAH has endured such disturbances, the EIS must scientifically demonstrate that the CAH and the PCH are equivalent. The current Draft EIS does not do this, and, thus, fails to achieve the precedent necessary to proceed with the leasing process.	Section 3.3.4 discusses differences between the CAH and PCH.

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50.	Withheld	Withheld	The Wildlife Society - Alaska Chapter	72005	2	Terrestrial Mammals	The DEIS needs to address in detail the geographical variation across the landscape of the North Slope. Nearly all of the current petroleum exploration and development to the west of the Refuge (e.g., Prudhoe Bay and the northeastern NPR-A) have occurred in a landscape much different than the Refuge coastal plain. The narrow, compressed coastal plain of the Refuge makes large-scale resource development much more problematic as there are many fewer options for wildlife to avoid development infrastructure. This is particularly an issue for the Porcupine Caribou Herd. In addition, the lack of water in lakes, which is much different from the vast wetlands to the west where oil and gas activities are expansive, has significant implications for the feasibility, design and cost of an industrial-scale oil and gas program on the Refuge coastal plain, as well as for impacts on fish, wildlife and the natural landscape. These differences must be clearly addressed in the DEIS	Additional text has been added for clarity.
51.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	4	Terrestrial Mammals	the National Oceanic and Atmospheric Administration's 2018 Arctic Report Card found that Arctic caribou populations have decreased by more than 50 percent in the past 20 years. These calving animals cannot be placed under additional stress if ANILCA's requirement "to conserve fish and wildlife populations and habitats in their natural diversity" are to be met. A final EIS must collect biological and ecological data to demonstrate that the action alternatives will not alter conservation of natural diversity of wildlife in the region.	Additional text on trends in North American caribou populations has been added.
52.	Withheld	Withheld	The North Face	72063	3	Terrestrial Mammals	The U.S. Geological Survey stated that studies over extended periods of time are needed to reliably identify important habitats near potential infrastructure and understand the effects of oil and gas development on wildlife (caribou and muskoxen).	Caribou and muskox have been the subject of long-term studies in and around the project area.

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53.	Stuart	Pechek	—	72083	2	Terrestrial Mammals	Even though many oil lines are built by ice roads (which melt in the late spring) the existing infrastructure exists and does create an impediment to wildlife migration, as in this case obviously, the Porcupine Caribou Herd. The Central Arctic Herd was able to move their birthing and calving grounds to adapt. In Pruhoe Bay and Kaparuk, I observed where the bull caribou would mingle amongst pipeline infrastructure while the cows and calves would skirt the oil lines. Total observation but held everytime I watched. The Porcupine Herd's calving grounds are more constricted by the Brooks Range, much closer to the south, and displacement here from traditional birthing grounds could have serious consequences.	The potential impacts on calving caribou and caribou moving through oil field infrastructure are discussed in Section 3.3.4.
54.	Withheld	Withheld	—	72125	43	Terrestrial Mammals	Terrestrial Mammals Comments (Section 3.3): The DEIS in Section 3.4.3-Subsistence Uses and Resources-describes additional impacts of development on fish and wildlife natural diversity. The DEIS describes impacts such as (1) noise and traffic associated with the leasing program could potentially affect the availability of resources, such as caribou, marine mammals, furbearers, and small land mammals, fish, and migratory birds; (2) potential impacts on caribou availability including displacement of caribou from areas of heavy oil and gas activity, diversion of caribou from their usual migratory routes, and skittish behavior, which results in reduced harvest opportunities; and, (3) in addition to large land mammals, furbearers, such as wolf and wolverine, may avoid areas of heavy traffic, drilling noise, seismic testing, and other activity. The described impacts indicate that oil development would significantly degrade the fish and wildlife and their habitat natural diversity on the Coastal Plain.	The Draft EIS discusses potential impacts on these species under the alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Ruth	Wood	—	73662	7	Terrestrial Mammals	The Coastal Plain provides vital calving and post-calving habitat for the Porcupine Caribou Herd. BLM estimates that only 49% of the Coastal Plain is sensitive calving grounds for the caribou as though 49% isn't a lot. (49% for the caribou, 77% for the polar bear, both numbers are hugely significant, but by taking an individual rather than ecosystem approach, a reviewer has to dig for that information.) Also, it doesn't consider that the caribou use the entire Coastal Plain during calving and post-calving, which is a critical time for the caribou. And, it doesn't consider that the area of the Coastal Plain used during calving and post-calving changes from year to year. This overlap needs to be recognized and provided for because the caribou do use the entire Coastal Plain not just the one same spot every year.	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area.
56.	Howie	Wolke	Big Wild Adventures, Inc.	74300	1	Terrestrial Mammals	The DEIS fails to adequately assess the impacts on tundra vegetation and upon wildlife, particularly the calving grounds for the migratory caribou herd plus habitat for nesting waterfowl, which all depend upon the coastal plain.	These issues are discussed in the EIS in Section 3.3. 1 and Section 3.3.4
57.	Heather	Mirczak	—	74303	3	Terrestrial Mammals	At this time, identified in the EIS, we know that anything that moves the Porcupine caribou herd away from the coastal plain has been shown to be detrimental to calf survival. I do not think the BLM has adequately addressed the impacts or considered the full range of areas important to the caribou. I would like to see these issues addressed before a final report is made.	The potential impacts of calving displacement for the PCH are discussed in Section 3.3.4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Lisa	Baraff	Northern Alaska Environmental Center	74306	28	Terrestrial Mammals	The BLM acknowledges that oil and gas activities will likely disturb and displace caribou, especially sensitive cows and calves. Map 3-21 shows PCH calving and post-calving covering most of the Coastal Plain (Vol. 2, 3-21). BLM estimates that only 49% of the Coastal Plain is sensitive calving grounds for the PCH, but this vastly undercounts the value of the coastal plain to the caribou, who use essentially all of the Coastal Plain during calving and post-calving when they are sensitive to disturbance. The agency fails to adequately address these impacts and to consider the full range of areas that are important to caribou. Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival (Vol. 1, p. 3-114) and, in fact, would likely hinder population growth (Vol. 1, p. 3-115). Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation. The DEIS offers insufficient mitigation of the impacts to PCH. Even the most restrictive alternative only halts "major construction activities" --but not drilling-- for a single month of the year when caribou are calving (Vol. 1, 2-13)	The Draft EIS indicates that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area. The claim that the most restrictive alternative only halts major construction activities, but not drilling for a month is incorrect. This text is from Alternative B, other alternatives have additional stipulations.
59.	Lisa	Baraff	Northern Alaska Environmental Center	74306	29	Terrestrial Mammals	In addition to the importance of the calving period, pre-calving arrival on the calving grounds, post-calving, and summer insect relief are also critical to calf and adult survival throughout the year. The entire Coastal Plain is used by caribou over time. The DEIS needs to clearly reflect the full array of historic data that represent use of the Coastal Plain.	Additional maps of caribou herds were added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
60.	Lisa	Baraff	Northern Alaska Environmental Center	74306	30	Terrestrial Mammals	Displacement and disruption of calving and post-calving caribou by oil exploration and development in the Refuge, where the densities of caribou are very high, is likely to have far greater consequences than historically seen in state and federal lands to the west of the Refuge. This includes the influence of the narrower Coastal Plain (only 10-40 miles wide) in the Arctic Refuge which drastically limits available suitable habitat. The DEIS fails to include implications of this feature for caribou and must do so in a revised DEIS.	Additional text on narrowness of Coastal Plain in the project area was added.
61.	Matthew	Rexford	Native Village of Kaktovik	74308	2	Terrestrial Mammals	NVK would prefer a different format for maps related to PCH Caribou Calving, specifically maps 3-21, 3-23, and E-1 in the DEIS. 3 1. There should be clear references to what data was used to compile these maps - beyond what date that they were generated - as they do not reflect data that we have seen in other studies, nor our own experience. Recently, we have noticed that the herd is around our village for a very short time or sometimes not at all. They rarely venture on to the privately held lands around the village that we are able to access and we notice that they mostly stay in the foothills of the Brooks Range. We have relied much more heavily on the Central Arctic herd in recent years. 2. We prefer the map format used in the Fish and Wildlife Service (FWS) Comprehensive Conservation Plan (CCP) [Figure 1], which shows calving data per year. This kind of information is important as it shows changes in the herd's preferred calving area and how often the Coastal Plain is actually used by cows for calving. The CCP data shows that starting in the early 2000's, concentrated calving areas were mostly in the Canadian Arctic and there are only a few years where calving occurred in the Coastal Plain. When this data is presented on top of itself in an aggregated, cumulative format, these	Source of data for maps were cited; Maps were provided that more clearly depict the PCH's calving area and use; and Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	nuances are lost. For such an important resource to both Iñupiat and Gwich'in communities, the data must be as clear and accurate as possible. 3. Traditional Knowledge should be incorporated into the subsistence and wildlife data. Our hunters are out on the land far more than any agency biologists are, and the information we can provide is invaluable. We notice often that due to weather or sheer bad timing, surveys are not conducted during calving time, but often a week or more later. Additionally, there are very few, if any, references to Traditional Knowledge in the DEIS and no conversations with hunters or knowledge keepers are referenced. NVK recommends remedying this for the Final EIS with clear citations to the knowledge and who presented it. 4. While we understand that the maps focus on the Program Area, it is misleading that they end at the United States and Canadian Border. Data from the CCP1 , the Alaska Department of Fish and Game2 , and elsewhere shows that the Porcupine Caribou Herd is just as reliant on the Ivavik and Vuntut National Parks east of the Program Area for calving. Only showing the Program Area is misleading and skews perception that the PCH only use the 1002 area for calving, which is false. 1 FWS CCP Pg 4-99 2 Species Management Report: Caribou Management Report. ADF&G, Division of Wildlife Conservation. June 2014. Page 15-8 ADF&G Porcupine Caribou Bulletin Summer 2017 4 5. There is not much information on the size and current health of the PCH included in the DEIS. In July 2017, a survey3 estimated the PCH to be at 218,000 caribou - a record high of the herd. It should be included in the EIS that the PCH could be reaching their peak given what their habitat can support. According to the Alaska Department of Fish & Game, "caribou populations are known for dramatic	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	population changes. Once a herd becomes too large for its habitat, the caribou become nutritionally stressed and the herd will decline. These fluctuations are a normal part of caribou herd biology. ⁴ “ NVK is concerned that any future decline of the PCH would be attributed to potential future oil and gas activity in the Coastal Plain, while the truth may be that the decline is simply a part of the natural cycle of caribou herds. Figure 1: Porcupine Herd Calving Areas from FWS CCP 2015 3 Press Release, “Porcupine Caribou Herd Grows to Record High Numbers.” Alaska Department of Fish and Game. January 2 2018. Available at: http://www.adfg.alaska.gov/index.cfm?adfg=pressreleases.pr&release=2018_01_02 4 ADF&G Porcupine Caribou Bulletin Summer 2017	(see above)
62.	Matthew	Rexford	Native Village of Kaktovik	74308	4	Terrestrial Mammals	Witnessing the calving and start of migration of the Porcupine Caribou Herd has become a tourist attraction. Tourists travel every year to the Canadian/USA border to witness this event. NVK would recommend that you analyze the impacts of this tourism on herd behavior and concentrated calving areas. In our estimates, at least 100 people fly in each year for this event and we believe that between air traffic, campsites, and the sheer number of people, the PCH are impacted and this should be included in the EIS.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, would be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	Jason	Paulsen	—	74312	2	Terrestrial Mammals	the EIS fails to adequately address (forecast and analyze) the impacts that a changing climate is having with respect to the baseline condition of the Coastal Plain as it relates to the feeding, birthing! calving and migration needs of both the caribou and polar bear. To measure forecast conditions by way of a baseline that doesn't adequately anticipate significant climate-related changes to the landscape already underway (warming, thawing, changes in vegetation type) as documented by NOAA and others, fails to honestly evaluate the "whole" of the likely cumulative impacts of the proposed actions (drilling in the Coastal Plain) and assumes an unrealistic "status quo" as that baseline.	The potential effects of climate change on caribou are discussed in Section 3.3.4.
64.	Wolfgang	Rehor	—	74318	2	Terrestrial Mammals	Caribou are very sensitive to all infrastructure, pipelines, and noise. It has been seen that caribou stay away from infrastructure up to 20 miles but the Draft EIS calculates with an extremely low displacement of 2.49miles (3-112). The coast which is important for caribou for insect relief due to windier conditions has in the best alternative for caribou, B, only a 2 miles zone of no infrastructure. The possibility to move over long distances between the nutrient-rich areas and the windier coast in the post-calving period to avoid insect harassment and blood loss (a caribou can lose up to 125 gram per day from insects) will be hindered, which can lead to illnesses and higher mortality.	The EIS discusses literature on displacement distance and movements through infrastructure.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Allen E.	Smith	—	74324	6	Terrestrial Mammals	Third, the DEIS fails to demonstrate how oil and gas leasing will be managed to prevent harm to the significant wildlife species and populations protected by ANILCA purposes that rely on the Arctic Refuge coastal plain for critical habitat and food, including but not limited to the following: (A)The 200,000 animal Porcupine Caribou Herd (PCH) annually migrates onto the coastal and fully occupies its entire area moving back and forth across the plain like a wave of life for calving, replenishing nutrition, predator avoidance, and insect relief - the DEIS does not adequately address the impacts of oil and gas leasing on the PCH and its requirements.	The EIS discusses literature on caribou response to infrastructure.
66.	Rosa	Brown	Vuntut Gwitchin Government	74326	9	Terrestrial Mammals	The Vuntut Gwitchin Government has worked extensively in recent years to document ancient stories and Traditional Knowledge of the Elders and harvesters. In 2017, the Vuntut Gwitchin Government Heritage Branch compiled documented Traditional Knowledge of disturbance to caribou to better inform best management practices for oil and gas activities in the range of the Porcupine caribou herd. Gwich'in knowledge holders listed a variety of things that disturb caribou. One often-expressed concern was pollution to water. Gwich'in say that caribou have no choice but to swim in polluted water. They have observed caribou eating polluted food. They are concerned that pipelines will block caribou migration and development will scare them away and they will stop coming to disturbed areas. Caribou will avoid noise and disturbances, but can get used to things like buildings if they are there for a while and no people are around. They avoid noise in most cases. ¹⁹	Traditional knowledge has been shared with BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.

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67.	Rosa	Brown	Vuntut Gwitchin Government	74326	13	Terrestrial Mammals	Underlying Assumptions for caribou impact are flawed The No Action Alternative does not meaningfully describe the benefits of the existing condition for the Porcupine Caribou Herd's range over a reasonably long time frame (at least 100 years) in light of Indigenous Peoples' use of the migratory caribou for 12,000 - 29,000 years and the presence of caribou in the region for at least 400,000 years.	The history of caribou hunting and existing condition of the PCH is discussed in the EIS.
68.	Rosa	Brown	Vuntut Gwitchin Government	74326	15	Terrestrial Mammals	The cumulative impacts section for the Porcupine caribou herd is only two paragraphs long (p. 3-122), has no results from qualitative or quantitative analysis, and contains this error, "subsistence hunting of caribou has probably occurred in the program area for millennia" [emphasis added].	Discussion of Russell and Gunn (2019) was added. Text was clarified.
69.	Rosa	Brown	Vuntut Gwitchin Government	74326	16	Terrestrial Mammals	The draft EIS section on the existing environment and caribou impacts (Draft EIS pages Vol. 1 3- 103 to 3-12) fails to incorporate any traditional knowledge and also contains a biased and poor summary of western scientific research on impacts of oil and gas development on the Central Arctic Caribou herd (e.g. see comment letters from the Yukon Government, Government of Canada, and the recent Vulnerability Analysis by Russell and Gunn 2019.30	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
70.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	2	Terrestrial Mammals	By reducing oil and gas development impacts only on less than half of the Coastal Plain (721,200 acre) and the area with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed (a very short period compared to their millennia-old existence), thus leaving the caribou herd not a free choice to chose the area that has the best conditions each year, compared to their ability to naturally spread over the whole Coastal Plain since millennia, will have incalculable impacts on the herd.	Potential impacts during caribou calving are discussed in Section 3.3.4.

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71.	Dr. Julianne Lutz	Warren	—	74344	9	Terrestrial Mammals	9)Caribou-Est. rates of survival and recruitment are imprecise. According to wildlife biologist Fran Mauer who has studied caribou for decades, the Porcupine herd highly likely requires the coastal plain for inter-annual climate resilience; infrastructure will spook cows w/calves away and the narrowness of the plain would mean bumping into the mts where predators await. The Gwich'in Nation, including in Canada have depended upon this herd for thousands of years and still do. This concern is an international one that has not been taken into proper account either.	Additional text on narrowness of Coastal Plain in the project area was added.
72.	Eric	Walsh	Government of Canada	74346	1	Terrestrial Mammals	The dEIS provides no indication that many of the proposed mitigations for caribou have been proven effective, that lease holders would have any requirement to demonstrate their effectiveness, or that there would be any coordinated monitoring activities pre- or post-development to implement an adaptive management program that would inform revisions to area-wide mitigations going forward. Further, the dEIS indicates that many lease stipulations and Required Operating Practices may be waived at the discretion of a BLM Authorized Officer.	Operators are required to submit a written request for an Exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM

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72. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
73.	Eric	Walsh	Government of Canada	74346	12	Terrestrial Mammals	Since there is no quantitative analysis of the impact to Porcupine Caribou of the project alternatives provided in the dEIS (see next issue, below), and also no such complementary analysis for Canadian subsistence users, Canada cannot evaluate the context or intensity (i.e. significance in NEPA) of these "potential indirect impacts". The dEIS is silent on compensation for these potential impacts, even though there is a precedent for providing compensation for residual impacts in the National Petroleum Reserve context	The EIS has been revised to analyze transboundary impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	Eric	Walsh	Government of Canada	74346	16	Terrestrial Mammals	Mitigation Effectiveness, Monitoring, Enforcement, Discretion and Oversight The Canadian science report gives a succinct summary of all the proposed mitigations in the dEIS (section 5.2.1 of the science report). Several notable elements emerge from that summary including that, in the classical mitigation hierarchy of avoidance, minimization and offsetting & compensation, the third category was not applied. Also, the actual effectiveness of many of the mitigations is weakly (at best) or not supported by peer reviewed literature. For example, the traffic management suggestions such as convoying have not been demonstrated to work, with the limited studies failing to make conclusion for a variety of reasons ²⁸ . Nor was evidence provided in the dEIS that non-reflective coatings on pipelines serve a purpose for caribou mitigation. No evidence was provided that stopping major construction, while allowing drilling, would make a difference to zones-of-influence. Expanding Table 3-19 to indicate which mitigation(s) or measure(s) applies to each potential effect in the table, along with cited literature for each line supporting the effectiveness of the proposed mitigation(s) would add clarity to the dEIS. ²⁸ See p. 74, Lawhead, B. E., A. K. Prichard, M. J. Macander, and M. Emers. 2004. Caribou Mitigation Monitoring Study for the Meltwater Project, 2003. Third annual report for ConocoPhillips Alaska, Inc., Anchorage, by ABR, Inc., Fairbanks	Non-reflective coatings on pipelines were requested in the late 1990s-early 2000s by North Slope Borough residents who believed shiny pipes scared caribou. Text has been revised as appropriate, to include reference to literature on mitigation effectiveness when available.

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75.	Eric	Walsh	Government of Canada	74346	18	Terrestrial Mammals	Lease stipulation 6 is meant to "ensure unhindered movement of caribou through the area" by using ROP 23 and some discretionary timing limitations for construction activities. Unfortunately, the dEIS does not contain a movement study of PCH, does not analyze collar data from CAH to quantify the effectiveness of various historical pipeline heights and orientations, or traffic frequency effects to large aggregations of caribou (though these data could have been analyzed), and does not contemplate the potential size of current PCH aggregations (that are 2 orders of magnitude larger than the dEIS's 1000 animals) and how such large groups might behave.	Additional maps of PCH areas were added.
76.	Eric	Walsh	Government of Canada	74346	19	Terrestrial Mammals	Canada is also concerned that many of the mitigations are tied to specific spatial areas, such as the dEIS's definition of the calving area - and will not apply when caribou calve in other areas. The dEIS provides evidence that PCH calve throughout the 1002 area (Map 3-23), but most frequently in the southeast. Because of these spatial definitions, some Alternatives (e.g. B) there will be years where the PCH calve outside the area defined as the "primary calving habitat" ²⁹ (Lease Stipulation 7), and therefore may be no mitigations aside from "standard terms and conditions". It could not be determined from the dEIS what suite of procedures fall under "standard terms and conditions".	Standard terms and conditions include ROPs, especially ROP 23. Further site-specific environmental evaluation and compliance would occur at the lease-sale and project-site levels to consider impacts to sensitive wildlife.
77.	Eric	Walsh	Government of Canada	74346	20	Terrestrial Mammals	Page 3-106 defines the terms used for calving areas, but without any methodology or detail on how they are defined from collar locations. "Primary calving habitat" is not defined along with the 4 other terms listed on that page. None of these terms are linked to the quantitative descriptions in Table J-15.	Additional text was added for clarification.

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78.	Eric	Walsh	Government of Canada	74346	31	Terrestrial Mammals	For calving areas, the dEIS used "areas with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed". Not only is this vague (see specific comments), but it raises the question: why 40%? This value is not justified in the dEIS, and moreover does not consider the change in use of the calving grounds through time. The dEIS needs to take a rigorous, defensible and transparent approach to defining this value as it drives the land tenure options to a significant degree.	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area. The EIS acknowledges that the calving distribution could change with climate change.
79.	Eric	Walsh	Government of Canada	74346	32	Terrestrial Mammals	the calculations of stipulation areas based on number of years caribou were present. It seems that the dEIS considered each category of use by caribou (20-30% of the years, >40%, etc.) as independent units. A more useful metric would have been to consider these categories as what they are, i.e., proportions of the years caribou are present, thus using categories such as >20%, >30%, >40%, etc. It is not possible to compare a proportion of years ranging between two set values (say between 20% and 30%) to a category spanning a much larger range, e.g. 40% to 100%. Comparing those two categories simply doesn't make any sense. Technically this does not cause problems for the mapping of areas, but it does matter when calculations of the areas covered by these categories are made. This may look like a simple mistake (the numbers do not add up in Table J-15), but we suspect it may have large consequences on the actual acreages mentioned everywhere throughout the dEIS. This needs to be corrected.	Table J-15 adds up with some rounding error (1,487,100 acres 100.1% for calving; 1,487,200 acres 100.1% for post-calving). These categories can be considered independent units (e.g., areas used frequently, areas used moderately frequently, areas used infrequently).
80.	Eric	Walsh	Government of Canada	74346	33	Terrestrial Mammals	Though it was pointed out in several places that the biology and space use of the PCH and CAH is quite different ³⁷ , the dEIS assumes that mitigations and approaches used for the CAH will work well for the PCH.	Additional information on differences among herds and regions was added

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
81.	Eric	Walsh	Government of Canada	74346	34	Terrestrial Mammals	Chapter 3 Environment and Environmental Consequences Section 3.3.4 Terrestrial Mammals Table 3-19 The dEIS states if potential impacts are "Adverse" or "Beneficial" but not if they are "Significant". In the dEIS Glossary a "significant impact is one that exceeds a certain threshold level and evaluated based of the severity of the impact and likelihood of its occurrence". No thresholds, severity measurements or indications of likelihood of occurrence are provided for caribou in any of the scenarios.	The conclusion of significance is not required item by item in the EIS, but the context and intensity of each impact was described.
82.	Eric	Walsh	Government of Canada	74346	36	Terrestrial Mammals	There is no definition in the dEIS when disturbed lands would be deemed suitable caribou habitat after reclamation.	Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.
83.	Eric	Walsh	Government of Canada	74346	37	Terrestrial Mammals	No quantitative analysis of scenarios was completed for terrestrial mammals. Qualitative analysis also assumes that subsistence hunting will be allowed along gravel roads, underestimates displacement of maternal caribou, and assumes that mitigation measures will mitigate the effect of roads and pipelines on caribou movement. These assumptions are not supported in other existing North Slope oilfield operations or cited literature. The population impacts of increased (unregulated) hunting pressure of caribou on all oil-field road where hunting has not occurred in the past is unprecedented. There is no mention of creating a US Caribou Harvest Monitoring Plan to track the impact of increased access on caribou hunting.	Additional information on CAH road crossings was added. Additional information on hunting was added. A harvest monitoring plan is outside the scope of this EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84.	Eric	Walsh	Government of Canada	74346	45	Terrestrial Mammals	3-114, on the concept of habituation: Habituation is likely only possible if the disturbance is perceived by the animals as having no relationship with increased mortality on the long-term. This is not the case with many infrastructure such as roads. Roads remain a predation risk that has been noted in many studies. If the stimulus remains tied to an increased probability of dying, it is not apparent how the animals could habituate. In fact, it would go against natural selection theory. "Habituation" is a vague notion. Caribou have to deal with the fact that new roads are built in their home range, and thus must modify their behavior to deal with this new reality. Is this really habituation, or just a normal behavioral response to a change in the environment? "Habituation" has the unwarranted connotation that disturbances do not "matter" after a while. A more parsimonious explanation would be that this behavior can be explained by a trade-off between reacting strongly to the disturbance (because it is a source of increased mortality) vs. not reacting too strongly to it (because chronic levels of stress have negative impacts on their physiology), and thus we should expect a decrease in reactivity with time (unless predators learn how to use them and become increasingly efficient with time). Using a stretch of the habituation terminology, it is not correct to state that prey are "habituated" to their predators, yet they have evolved together for thousands of years. Caribou just have adapted behaviors to "deal" with it. That does not mean that 'some' individuals may not be more tolerant to disturbances than others (for example, males) and thus could be found near infrastructure. The real question is, however, whether or not these individuals have an important contribution to the growth of the population. Generally speaking, pregnant	The unknown but potentially negative effect of hunting on caribou tolerance of oil-fields is discussed. Additional text as added for clarification.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
84. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	mothers are more critical to the growth of the herd, and they are known to be extremely sensitive to disturbance. On the question of habituation, we note that ZOIs discussed in Johnson and Russell ⁴³ were not cited in the dEIS. ⁴³ Johnson, C.J. and D.E. Russell. 2014. Long-term distribution responses of a migratory caribou herd to human disturbance. Biol. Conserve. 177:52-63. Significantly, the EIS states that it is assumed that "subsistence hunting will be allowed along gravel roads" (F-28). This would increase the ZOI associated with roads by combining a predation + hunting risk, and this must be reviewed and analyzed.	(see above)
85.	Withheld	Withheld	—	75137	6	Terrestrial Mammals	The BLM acknowledges that oil and gas activities will likely disturb and displace caribou, especially sensitive cows and calves. Map 3-21 shows PCH calving and post-calving covering most of the Coastal Plain (Vol. 2, 3-21). BLM estimates that only 49% of the Coastal Plain is sensitive calving grounds for the PCH, but this discounts that the caribou essentially use all of the Coastal Plain during calving and post-calving when they are sensitive to disturbance. These impacts are not adequately addressed. Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival (Vol 1, p. 3-114) and in fact would likely halt population growth (Vol 1, p. 3-115). Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation. The DEIS offers insufficient mitigation of the impacts to PCH. Even the most restrictive alternative only halts "major construction activities"--but not drilling--for a single month of the year when caribou are calving (Vol 1, 2-13).	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area. The claim that the most restrictive alternative only halts major construction activities, but not drilling for a month is incorrect. This text is from Alternative B, other alternatives have additional stipulations.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Withheld	Withheld	—	75145	4	Terrestrial Mammals	However, BLM failed to adequately address the impacts on caribou and failed to consider the full range of areas and habitats that are vital to caribou during their annual migration	Additional caribou figures were added.
87.	DJ	Schubert	Animal Welfare Institute	75588	14	Terrestrial Mammals	The Porcupine Caribou Herd ("PCH") and the Central Arctic Herd ("CAH") both rely on habitat located in the Coastal Plain for vital parts of their lifecycle. The PCH migrates 700 miles, twice a year, to the Coastal Plain during calving season.¹⁰ The PCH has calved in the Coastal Plain for thousands of years. Females return there year after year to give birth. Approximately 40,000 calves are born on the Coastal Plain each year.¹¹ The PCH mainly uses the Coastal Plain as a staging ground with the south central portion representing a core caribou calving ground. The PCH uses the western portion of the Coastal Plain as a post-calving ground.¹² The CAH also uses a portion of the Coastal Plain for calving. The impacts on the PCH and CAH from oil and gas exploration and development may be severely detrimental to the health of the herd. Caribou are known to be skittish and wary of human activity preferring to seek out alternate high-quality forage areas in order to avoid industrial sites.¹³ Various studies support the conclusion that industrial activity disturbs caribou and alters their behavioral patterns. A summary of such studies was reported by Science: In Canada's Northwest Territories . . . researchers found that caribou spent less time than expected in areas as far as 14 kilometers away from diamond mines. To the west of the Arctic refuge, in the heart of the North Slope oil fields, researchers with the U.S. Geological Survey (USGS) found that, in the 1980s and 1990s, the Central Arctic caribou herd shifted calving areas away from well concentrations. And in long term studies of the Porcupine herd (named after the Porcupine River in the	A discussion of the literature on caribou displacement from infrastructure is in the EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
87. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Yukon and Alaska), Johnson found that even decades after oil development in the Canadian portion of its range, caribou were still avoiding areas within 6 kilometers of roads and wells. ¹⁴	(see above)
88.	DJ	Schubert	Animal Welfare Institute	75588	16	Terrestrial Mammals	The DEIS states: Alternative B would suspend major construction activities and place limits on vehicle traffic and vehicle speeds in the PCH primary calving habitat area (Lease Stipulation 7 and ROP 23) during the calving period (May 20 to June 20).¹⁶ The PCH calving habitat area would not be subject to specific lease stipulations after June 20, although the area is used extensively by the PCH during the post-calving period (PCTC 1993); it would still be subject to the limitations in ROP 23 and ROP 34. As a result, some potential impacts on caribou distribution and movements may occur in this area during the post-calving period."¹⁷ These limitations are not protective enough. The inherent antipredator response of new caribou mothers during the first three weeks of calving makes them wary of roads, pipelines, vehicles, and human activity.¹⁸ Mothers with calves try to stay at least 4 km from roads, and researchers have documented displacement of calving grounds away from oil field structures.¹⁹ Disturbed mothers may run, which greatly increases the likelihood of them losing their calves. Additionally, one study indicated, based on satellite photos that distinguish between high and low-quality vegetation, that the vegetation in alternative calving grounds that the caribou used as a result of displacement was deficient in nutrients compared with the preferred and traditional grounds. This nutritional deficiency was identified as the cause for a decline in caribou fertility rates from 83 percent on the traditional calving grounds to 65 percent of cows calving on the alternative grounds.²⁰	These points are discussed in the EIS. There are more up-to-date parturition rates for the east and west segments of the CAH.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89.	DJ	Schubert	Animal Welfare Institute	75588	17	Terrestrial Mammals	Additionally, noise pollution from oil fields in the 1002 area historically caused the PCH to cease migration to areas of the Coastal Plain for calving season. Many animals cannot tolerate drilling noises in excess of 75 decibels, causing them to avoid those areas.²¹ Furthermore, main pipelines can adversely alter caribou movement after calving, as they seek relief from harassment by insects. Oil development in the 1002 area could reduce the access to these important relief habitats. If caribou cannot freely move to a lower density insect habitat, there could be severe consequences, including disease or death, particularly for calves.²² These impacts can strongly affect calf survival and the long-term stability of the PCH and CAH. An article published in Science reported that a "2002 USGS modeling study estimated that if drilling on the coastal plain were as extensive as on the North Slope, the survival rate of caribou calves would drop by as much as 8%, depending on where most calving occurred, in part because of greater exposure to predators and lower-quality forage."²³ Other researchers report even higher mortality rates, with models suggesting that displacement from the calving grounds will lead to an 18-20 percent increase in calf mortality, causing dramatic herd declines.²⁴ Additionally, in 1992, the Alaska Department of Fish and Game found that calf survival was very high on the Coastal Plain, and very low when the caribou were displaced further south or east²⁵-as would result from oil and gas development in the 1002 area. Such mortality could ultimately cause herd numbers to fluctuate more dramatically, and make it harder for caribou to recover from declines.²⁶ Furthermore, one concerning impact of climate change on the survival rates of caribou is the likelihood of an increased incidence of rain-on-snow events. Such	The research on caribou displacement from calving areas in the project area is cited in the EIS. Reference to Russell and Gunn (2019) and additional rain-on-snow event literature was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
89. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	events can be devastating to caribou because they create an impenetrable layer of ice that covers the plants caribou rely on. ²⁷	(see above)
90.	Andrew	Ogden	—	75704	7	Terrestrial Mammals	BLM estimates that only 49% of the Coastal Plain is sensitive calving grounds for the PCH, but this vastly undercounts the value of the coastal plain to the caribou, who use essentially all of the Coastal Plain during calving and post-calving when they are sensitive to disturbance. The agency fails to adequately address these impacts and to consider the full range of areas that are important to caribou. Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival (Vol 1, p. 3-114) and in fact would likely halt population growth (Vol 1, p. 3-115). Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation. The DEIS offers insufficient mitigation of the impacts to PCH. Even the most restrictive alternative only halts "major construction activities"-but not drilling-for a single month of the year when caribou are calving (Vol 1, 2-13).	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area. The claim that the most restrictive alternative only halts major construction activities, but not drilling for a month is incorrect. This text is from Alternative B, other alternatives have additional stipulations.
91.	Withheld	Withheld	—	75705	1	Terrestrial Mammals	The Porcupine Caribou Herd depends on the unique ecological resources of the entire Coastal Plain during its annual migration and calving. BLM acknowledged that oil and gas activities will likely disturb and displace caribou, especially sensitive mothers and their young. However, again, BLM failed to adequately address the impacts on caribou and failed to consider the full range of areas and habitats that are vital to caribou during their annual migration.	The distribution of caribou and impacts from potential calving displacement are discussed in the EIS and additional caribou maps were added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
92.	Lin	Davis	—	75891	8	Terrestrial Mammals	Likely the imposed hurried timelines have caused your staff to take shortcuts. Please have staff pay special attention to the scientific differences between the IINWR caribou and the NPR-A caribou. The draft EIS says protection of AIFWR caribou is paramount but the EIS has not made an adequate case for attaining that goal.	Additional text on differences between CAH and PCH and narrowness of Coastal Plain was added.
93.	Withheld	Withheld	—	77891	2	Terrestrial Mammals	The DEIS would allow irreparable harm to the environment and the wildlife and humans that depend on it. The Coastal Plain of the Arctic National Wildlife Refuge that is proposed for oil and gas leases provides vital calving and post-calving habitat for the 200,000 animals of the Porcupine Caribou Herd. This herd depends on the unique ecological resources of the entire Coastal Plain during its annual migration and calving. BLM acknowledged that oil and gas activities will likely disturb and displace caribou, especially sensitive mothers and their young, yet did not adequately address the impacts on caribou and failed to consider the full range of areas and habitats that are vital to caribou during their annual migration.	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.
94.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	8	Terrestrial Mammals	By reducing oil and gas development impacts only on less than half of the Coastal Plain (721,200 acre) and the area with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed (a very short period compared to their millennia-old existence), thus leaving the caribou herd not a free choice to choose the area that has the best conditions each year, compared to their ability to naturally spread over the whole Coastal Plain since millennia, will have incalculable impacts on the herd.	The Draft EIS discusses that fact that other portions of the project area will be used for calving in some years.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
95.	Peter	Schwarzbauer	Arbeitskreis Indianer Nordamerikas/ Working Circle Indians of North America	79712	9	Terrestrial Mammals	Caribou are very sensitive to all infrastructure, pipelines, and noise. It has been seen that caribou stay away from infrastructure up to 20 miles but the Draft EIS calculates with an extremely low displacement of 2.49 miles (3-112). The coast which is important for caribou for insect relief due to windier conditions has in the best alternative for caribou, B, only a 2 miles zone of no infrastructure. The possibility to move over long distances between the nutrient-rich areas and the windier coast in the post-calving period to avoid insect harassment and blood loss (a caribou can lose up to 125 gram per day from insects) will be hindered, which can lead to illnesses and higher mortality. At the same time, due to new roads in the area, predators from the hillier areas southwards, can get more easily in the Coastal Plain, becoming a greater risk for the caribou herd, especially the cows and calves. Another danger for the mortality is the possibility of invasive species that normally comes along with human presence and more access, roads and vehicles, altering the vegetation and causing illnesses.	Caribou displacement in different studies was discussed in the EIS. The probability of invasive species was discussed in 3.3.1.
96.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	38	Terrestrial Mammals	3-114 The DEIS references Boulanger et al. (2012), a study regarding migratory caribou displacement near two open-pit diamond mines in Canada. This study is not comparable to roads and other facilities related to the Coastal Plain program because (1) open-pit diamond mine noise and disturbance is not similar to oil and gas exploration and development, and (2) the two diamond mines had footprints of 10 and 30 square kilometers, respectively, which is orders of magnitude larger than roads and other facilities associated with oil and gas development. References to this study should be removed from the FEIS.	Additional displacement studies was referenced.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
97.	Cherise	Gaffney	Alaska Oil and Gas Association, and American Petroleum Institute	79893	39	Terrestrial Mammals	3-114, 3-117 The DEIS makes the explicit assumption that maternal female caribou with young calves will avoid active infrastructure "[t]hroughout future drilling and operations," by "up to 2.49 miles." It also refers to Lawhead et al. (2004), which noted displacement of cows and calves from the Meltwater road in Kuparuk. The DEIS fails to note that the same study states that, within two weeks after estimated peak calving, maternal females with calves no longer avoided roads. Lawhead et al., Caribou Mitigation Monitoring for the Meltwater Project, 2003, Third Annual Report, at 2 (Mar. 2004). The FEIS should include these statements and clarify that maternal female caribou with young calves are not likely to avoid roads or facilities after a period of habituation.	Additional displacement studies was referenced.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
98.	Withheld	Withheld	—	79895	1	Terrestrial Mammals	The draft EIS for the Coastal Plain Oil and Gas Leasing Program does not sufficiently address impacts to the Porcupine caribou herd (PCH). The EIS lists a number of adverse effects to the PCH under action alternatives B, C and D. However, it also makes tenuous comparisons to the response of the Central Arctic Herd (CAH) to oil and gas activity. The PCH and CAH differ for a number of reasons and the EIS provides little evidence to support the transferability of CAH response to the PCH response. In particular, the swath of available coastal plain (with sufficient early emerging, nutritious forage) is significantly narrower for the PCH, and thus the PCH has fewer options to select calving grounds that provide adequate nutrition for pregnant mothers and newborn calves. PCH calf survival is also closely tied to spring and summer forage conditions. Spring and summer forage conditions are less important to CAH calf survival. Thus any displacement of calving activity (as happened with the CAH and is likely to happen to the PCH should development occur on the 1002) would be more detrimental to the PCH than it was to the CAH.	Additional text on differences between CAH and PCH and narrowness of Coastal Plain was added.
99.	Withheld	Withheld	—	80022	4	Terrestrial Mammals	3. The agency fails to adequately address the impact of future oil exploration and development on the Porcupine Caribou herd which utilizes the majority of the area of the Coastal Plain during calving and post-calving activities. The DEIS does not address mitigation strategies to minimize impacts on caribou - what policies and protections will be put in place to minimize impacts? How will local communities be involved in this process?	The distribution of caribou and impacts from potential calving displacement are discussed in the EIS and additional caribou maps were added.

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
100.	Deana	Lemke	Porcupine Caribou Management Board	80214	1	Terrestrial Mammals	It is the PCMB's determination that the draft EIS is deficient in evaluating the potential impacts of the proposed development on the PCH and, therefore, inaccurately concludes that the PCH's habitat and biology will not be affected in a way that will negatively affect the herd's abundance or availability. Based, in part, on a recent independent assessment of the vulnerability of the PCH to development in the Arctic National Wildlife Refuge (Russell and Gunn 2019), the PCMB asserts that there will be significant long-term impacts on the PCH and Canadian users of the herd from the proposed alternatives as described in the draft EIS.	Discussion of Russell and Gunn (2019) was added to the text.
101.	Deana	Lemke	Porcupine Caribou Management Board	80214	5	Terrestrial Mammals	The draft EIS concludes that development in the program area will not have an overall impact on the size of the PCH (e.g. E-6, E-9). However, a recent vulnerability analysis of the PCH completed by internationally recognized experts found that development in the Arctic National Wildlife Refuge will increase the probability of PCH population declines and constrain population growth (Russell and Gunn 2019). The EIS must provide current scientific data to demonstrate how mitigations can and will be implemented in a way that reduces residual effects on the PCH.	Discussion of Russell and Gunn (2019) was added to the text.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
102.	Deana	Lemke	Porcupine Caribou Management Board	80214	6	Terrestrial Mammals	The draft EIS also fails to adequately consider the impacts of development on the PCH at various historic population sizes and during times when the herd is in an increasing or decreasing phase of its population cycle. This is important given that the draft EIS estimates the time between the first lease sale and the reclamation of development to be 85 years (B-7). This implies that the herd could experience two full population cycles during the life of the project. Current science indicates that herd recovery after a population decline will be more precarious with any of the proposed development alternatives.	Discussion of potentially different impacts during population cycle was added.
103.	Deana	Lemke	Porcupine Caribou Management Board	80214	7	Terrestrial Mammals	In addition, the draft EIS indicates that harvesting will be allowed from new roads in the program area. Increased harvesting pressure associated with roads has been demonstrated to have a significant impact on caribou mortality and behavior. Failing to address this is a significant deficiency of the draft EIS. The EIS needs to consider how harvesting pressure will be minimized and adaptively managed in relation to herd size and current population trends. To assist with adaptive harvest management, PCMB recommends that a harvest management plan be implemented for the PCH on the US range, similar to the Harvest Management Plan for the Porcupine Caribou Herd in Canada and its associated Implementation Plan, and that the overall harvest be coordinated with Canada (see pcmb.ca).	The text has been revised to address indirect effects of subsistence use from roads. Site specific impacts would be analyzed with site specific NEPA analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
104.	Deana	Lemke	Porcupine Caribou Management Board	80214	11	Terrestrial Mammals	3. The draft EIS does not properly describe PCH use of the program area. The draft EIS defines the core calving and post-calving areas using a percentage of years that caribou are present using the four categories: <20%, 20-30%, 30-40%, and >40% (map 3-21). The >40% category is used as the basis for selecting areas that may be subject to more restrictive leasing stipulations in order to protect PCH calving and post-calving habitat (maps 2-5 and 2-7). The draft EIS does not describe how these categories were selected or why this is a scientifically appropriate approach for defining primary calving and post-calving areas.	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area.
105.	Deana	Lemke	Porcupine Caribou Management Board	80214	12	Terrestrial Mammals	Additionally, alternatives B and C use less stringent timing limitations and required operating procedures during the calving period. While there is a smaller statistical probability that the herd will calve in areas outside of the 40% category, the herd has calved throughout the Coastal Plain program area. It is reasonable to expect that the herd will again need to select any portion of the 1002 region for calving in response to annual environmental and biological factors. Previously documented annual fluctuations of calving locations indicate that the area chosen for calving by the PCH is the critical area for reproductive success in that year. Since each reproductive year is important, and since Porcupine caribou herd productivity is relatively low the alternatives must acknowledge and address the fact that calving could occur anywhere in the 1002 area. A failure to do so will result in the long-term loss of significant portions of prime calving habitat for the PCH, as was observed for the Central Arctic caribou herd. Anticipated decreases in calf survival have been predicted by numerous authors (e.g., Griffith et al. 2002; Russell & Gunn 2019).	This information was included in the Draft EIS Section 3.3.4.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
106.	Deana	Lemke	Porcupine Caribou Management Board	80214	13	Terrestrial Mammals	The draft EIS notably fails to describe impacts of development on large aggregations of caribou (Russell & Gunn 2019). Documented scientific observations have shown that the program area is important for large groups of PCH that form during the post-calving period but the impact of development on these "super groups" was not assessed in the draft EIS. The 1002 area is unique in that the largest known caribou aggregations (100,000 or more caribou) take place there during the post-calving period. Reactions of such large groups of caribou to vehicle traffic, drilling and other types of development are not known (Russell & Gunn 2019).	Discussion of caribou group size was added.
107.	Deana	Lemke	Porcupine Caribou Management Board	80214	14	Terrestrial Mammals	The draft EIS also does not adequately account for how climate change will affect the use of the program area by the PCH. As snow depth decreases in the future, the program area will predictably be used more frequently by the PCH, thus increasing the potential influence of future development on the herd (Russell & Gunn 2019).	The Draft EIS discusses the potential for additional use of the project area during calving due to climate change.
108.	Deana	Lemke	Porcupine Caribou Management Board	80214	15	Terrestrial Mammals	With respect to the PCH, the analysis of cumulative impacts in the draft EIS is deficient as it only considers cumulative impacts in the program area and not throughout the entire range of the herd. Further, this consideration is cursory, at best. An effective and complete assessment of the cumulative impacts of current and potential development in the range, including the proposed lease sales areas described in the draft EIS, is essential for adequately determining the impacts of implementing an oil and gas leasing program on the PCH. This assessment is also required by the International Porcupine Caribou Agreement, which states: "when evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, including cumulative impacts..."	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
109.	Deana	Lemke	Porcupine Caribou Management Board	80214	21	Terrestrial Mammals	The PCMB asserts that the draft EIS has not given adequate "effective consideration" (per item 3b from the International Porcupine Caribou Agreement) to the PCH and affected Canadian user communities and that a more detailed scientific analysis should be conducted using the most recent science. Also, traditional user communities in the Canadian range of the PCH should be consulted and no further steps should be taken in terms of oil and gas development activities in the Arctic National Wildlife Refuge until a supplementary draft EIS is published for further comment.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
110.	Deana	Lemke	Porcupine Caribou Management Board	80214	23	Terrestrial Mammals	Benchmarks & Criteria The importance of the Arctic National Wildlife Refuge for PCH calving, post-calving, and migration routes Established References International agreement on conservation of PCH Demonstrated consistent use of the 1002 Area and adjacent lands based on historical scientific migration and movement data (maps) and aboriginal traditional knowledge Draft EIS deficiency EIS acknowledges the importance of the area but provides no details or analyses to help understand potential impacts. Only non-current Sensitive Habitat maps are provided in their most basic form. For example: migration routes are only described in the context of insect relief and described as along the coast only, which is incorrect. Impacts to habitat and displacement of caribou are only based on 2,000 acres which is a small component of actual development.	Additional caribou maps were added. The impacts are described in terms of direct impacts and indirect impacts from displacement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
111.	Deana	Lemke	Porcupine Caribou Management Board	80214	24	Terrestrial Mammals	Benchmarks & Criteria Methods and procedures that ensure the long-term productivity and usefulness of the PCH be utilized within the Arctic National Wildlife Refuge Established References International agreement on conservation of PCH Demonstrated consistent use of the 1002 Area and adjacent lands based on historical scientific migration and movement data (maps) and aboriginal traditional knowledge Draft EIS deficiency EIS provides no real analysis to assess impacts to productivity (eg. calf survival, pregnancy) and no extension to population or distribution impacts. EIS attempts to address this via Lease Stipulations, Required Operating Procedures, and "properly designed infrastructure". Effectiveness of these mitigations is unclear and no evidence is provided.	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
112.	Deana	Lemke	Porcupine Caribou Management Board	80214	25	Terrestrial Mammals	Benchmarks & Criteria The risk of irreversible damage or long-term adverse effects on PCH habitat should be minimized via international cooperation Established References International agreement on conservation of PCH Historical scientific migration and movement data demonstrating PCH use of the 1002 Area and adjacent lands (maps) Draft EIS deficiency The EIS does not address the international aspect of PCH management and barely acknowledges Canada's role in managing the herd and its habitat, nor does it adequately acknowledge the herd's transboundary distribution	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
113.	Deana	Lemke	Porcupine Caribou Management Board	80214	26	Terrestrial Mammals	Benchmarks & Criteria Activities that would significantly disrupt migration or other important behavior patterns should be avoided or minimized via international cooperation Established References International agreement on conservation of PCH Historical scientific migration and movement data demonstrating consistent repeated PCH use of the 1002 Area and adjacent lands (maps) Draft EIS deficiency To date no efforts have been made through the International Porcupine Caribou Board or other means to address this. The EIS attempts to address this via Lease Stipulations, Required Operating Procedures, and "properly designed infrastructure". Analyses of impacts are qualitative and very general (F.4.15). Allowance of hunting on industry roads could compound effects. Main mitigations are pipeline height (7'), separation of roads and pipelines, timing of major construction and "no surface occupancy". The effectiveness of these mitigations is unclear.	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
114.	Deana	Lemke	Porcupine Caribou Management Board	80214	30	Terrestrial Mammals	Benchmarks & Criteria The EIS should consider how the objectives of the international agreement can be met and analyze potential impacts and cumulative impacts to the PCH and its habitat Established References International agreement on conservation of PCH PCMB submission re EIS, dated June 19, 2018 Draft EIS deficiency EIS provides categories of acres of different frequencies of use for calving and post-calving (Table J-13). There is no real assessment of cumulative impacts other than a descriptive paragraph that references some other factors that may be impacting the herd. The draft EIS fails to meet requirements set out in the National Environmental Policy Act. Climate change impacts are identified by stating that limiting development to a smaller portion of calving range would provide flexibility for the herd, but otherwise the EIS suggests impacts of climate change on the herd are impossible to predict (3-109).	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
115.	Deana	Lemke	Porcupine Caribou Management Board	80214	31	Terrestrial Mammals	Benchmarks & Criteria Sensitivity of the PCH during calving and recognition of historic use of 1002 Area and potential impacts on herd and subsistence users must be acknowledged Established References PCMB submissions re EIS, dated June 19, 2018 Draft EIS deficiency Most of the data presented in the draft EIS on this topic is related to the Central Arctic Herd (CAH). Data that does reference the PCH is not the most recent (e.g., Griffith et al. 2002 is main citation that is actually pertinent). Potential impacts of development are downplayed in the EIS	Discussion of Russell and Gunn (2019) was added

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
116.	Deana	Lemke	Porcupine Caribou Management Board	80214	33	Terrestrial Mammals	Benchmarks & Criteria Avoid or minimize activities that would significantly disrupt migration or other important behavior patterns of the Porcupine Caribou Herd Established References International agreement on conservation of PCH Russell & Gunn 2019 Draft EIS deficiency A key assumption used in the draft EIS is a 2.49 mile zone of influence (ZOI) surrounding oil and gas infrastructure. There is inadequate evidence to support the use of 2.49 miles for the displacement of calving PCH cows. The 2.49 mile value was derived from research on the CAH which has important differences when assessing responses to disturbance. Research shows that distance from disturbance or the ZOI of a development can be higher (Russell & Gunn 2019). The draft EIS acknowledges that the PCH will likely be more sensitive to disturbance given their historical lack of exposure to infrastructure (3-114). Therefore, the impact on the PCH should be anticipated to be higher than for the CAH.	The displacement of the CAH was ~2.5 miles in early phases of development. Zones of influence from different types of projects were discussed. Potential differences for PCH were discussed, additional text was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
117.	Deana	Lemke	Porcupine Caribou Management Board	80214	35	Terrestrial Mammals	Benchmarks & Criteria Increased hunting pressure on new roads will affect mortality and behavior of PCH and add to cumulative impacts on the herd. Studies have shown that caribou response distance related to roads (ZOI is greater when caribou are hunted). Hunting associated with roads increases the road ZOI from 0-3 km to 15 km (Plante et al. 2018). Established References Russell and Gunn 2017 and Plante et al. 2018 Item 3.g. from the international agreement on conservation of PCH states that potential impacts, including cumulative impacts, to the Porcupine Caribou Herd and affected users will be considered and analyzed. Draft EIS deficiency The EIS states that the most common stimulus associated with roads is vehicle traffic; however, it also indicates that harvesting would be allowed along gravel roads. No analysis has been provided to consider the cumulative and behavioral impacts of additional harvesting on the PCH.	Reference to Plante et al. (2018) was added.
118.	Deana	Lemke	Porcupine Caribou Management Board	80214	36	Terrestrial Mammals	Benchmarks & Criteria Cumulative impact of roads and traffic during summer Maternal caribou are more sensitive than at other times of the year. Established References Russell and Gunn 2017 and 2019 Item 3.g. from the international agreement on conservation of PCH states that potential impacts, including cumulative impacts, to the Porcupine Caribou Herd and affected users will be considered and analyzed. Draft EIS deficiency The EIS claims that caribou will be less affected by roads and traffic from mid to later summer (page E-7); however, it does not indicate how timing limitations and operating procedures will be monitored and implemented. No references to scientific analyses have been provided related to the effect of human activity on maternal caribou. ZOIs are in question (see previous points above).	References to caribou displacement during calving are included. Cumulative impacts shall be assessed in more detail. Limited monitoring would be provided by BLM and/or USFWS staff. As noted under ROP 40i, BLM has authority under 43 CFR 3163 to issue assessments and penalties for non-compliance with oil and gas operational requirements.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
119.	Deana	Lemke	Porcupine Caribou Management Board	80214	37	Terrestrial Mammals	Benchmarks & Criteria Methods and procedures that ensure the long-term productivity and usefulness of the PCH should be utilized within the Arctic National Wildlife Refuge Established References Russell & Gunn 2019 Draft EIS deficiency On pages E-11, E-13 and E-15 the EIS states that habitat loss or alteration from activities would not affect the availability or abundance for subsistence use. This statement is incorrect. The cumulative impacts of development predict a negative impact on herd size and therefore abundance for subsistence use will be affected.	Text in Appendix E, was updated in accordance with changes in Chapter 3 as appropriate.
120.	Withheld	Withheld	—	80223	1	Terrestrial Mammals	particularly troublesome is the interpretation that of the 2000 acres of land that can be developed with infrastructure is that it can be scattered or fragmented throughout the lease area. And also that only the piers on the raised pipelines count towards the 2000 acres. This allows for a much greater and more devastating impact on wildlife. It has been shown in previous studies that the Central Arctic Herd caribou will move calving areas at least 4 miles away from drilling infrastructure (Griffith et al.,2002, p31). Additionally, large herds of caribou have been documented to avoid traveling under pipelines and actually traveling up to 20 miles out of their way to go around the pipeline rather than go under it (Clough, Patton, and Christianson, 1987, p 112). With infrastructure and pipelines scattered all over it greatly reduces the ability of caribou and other wildlife to make adequate use of the land they so desperately need. It will be death by a thousand cuts.	The potential displacement during calving and delays or deflections during mid-summer movements are discussed in the EIS.

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121.	Tyler	Selden	—	80606	2	Terrestrial Mammals	Disturbing the traditional calving areas will result in higher calf mortality by pushing the calving area closer to the predator density in the mountains. Life there would be much more dangerous for them. In addition the feed is not as good there, for these and multiple other reasons the cows will not be as successful in raising the next generation of animals if they are encroached upon. The herd will shrink, the health of the animals will decline, ancient migration patterns will be scrambled and the opportunity for subsistence harvest will go down.	The potential for displacement of maternal caribou to lower quality areas is discussed in the EIS.
122.	Tyler	Selden	—	80606	3	Terrestrial Mammals	One other thing worth mentioning here is that BLM is basing most of its important assumptions on the adaptability of caribou herds on what happened to the Central Arctic Herd after development came to Prudhoe Bay. However, there are simply so many differences in the geography of the range and the population size of these two herds that most biologist agree that it is logically incoherent to do so.	The differences between PCH and CAH were discussed, additional text was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
123.	Withheld	Withheld	—	80930	3	Terrestrial Mammals	The Coastal Plain provides vital calving and post-calving habitat for the Porcupine Caribou Herd (PCH). The Coastal Plain offers nutrient rich forage, protection from predators, and relief from the relentless insects of the Arctic. The PCH use all of the Coastal Plain for various habitat needs during its annual migration. The BLM acknowledges that oil and gas activities will likely disturb and displace caribou, especially sensitive cows and calves. Map 3-21 shows PCH calving and post-calving covering most of the Coastal Plain (Vol. 2, 3-21). The agency fails to adequately address these impacts and to consider the full range of areas that are important to caribou. Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival (Vol 1, p. 3-114) and in fact would likely halt herd population growth (Vol 1, p. 3-115). Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation. The DEIS offers insufficient mitigation of the impacts to PCH. Even the most restrictive alternative only halts "major construction activities"-but not drilling-for a single month of the year when caribou are calving (Vol 1, 2-13).	These factors are discussed in the EIS. It is incorrect that the "most restrictive alternative only halts "major construction activities"-but not drilling-for a single month of the year when caribou are calving (Vol 1, 2-13)" This text is from Alternative B.
124.	Withheld	Withheld	—	81138	1	Terrestrial Mammals	Furthermore, the EIS is faulty in failing to consider the effect of compromised caribou populations over other parts of the ecosystem, including but not limited to, vegetation, predators, herbivores, insects, and other various detritivores. In other words, there will be global loss of ecosystem values and services resulting from the proposed project and the EIS fails to document the extent of this loss	Additional text was added for clarification of associated effects of lower caribou populations

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
125.	Withheld	Withheld	World Wildlife Fund	81184	9	Terrestrial Mammals	he BLM's draft EIS underestimates the significance of the Coastal Plain to the PCH during the calving and post-calving seasons and overlooks their full lifecycle. When calving takes place on the Coastal Plain, it typically happens in the southeastern corner. During the post-calving period, large aggregations of caribou form, partially in response to insect harassment. Once these large aggregations form - often over 100,000 animals - cows and their calves move northwest, farther into the Coastal Plain area. This positions them directly in the path of the proposed oil and gas activities, causing their displacement and preventing access to potentially more abundant and more nutritious forage. Although the PCH may show repeated use of certain areas and absence from other areas within the Coastal Plain, they do in fact need access to all areas of the Arctic Refuge as they cross it in search of the best quality forage. Further, the PCH must balance their need for forage with safety from predators and relief from insect harassment. Although forage is available in the foothills to the south, there are higher predator densities there. In other words, the PCH needs full access to the entire Coastal Plain so that they can choose optimal foraging habitat on a year to year basis. BLM must revise the draft EIS to account for the significance of the Coastal Plain to the PCH during the calving and postcalving periods	These issues are discussed in the Draft EIS. Additional caribou movement maps and text on large post-calving groups was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
126.	Withheld	Withheld	World Wildlife Fund	81184	12	Terrestrial Mammals	Monitoring and adaptive management: The draft EIS does not provide for robust monitoring or adaptive management options for the PCH. Monitoring of the PCH is necessary to identify thresholds that would prompt mitigation, describe the value of mitigation, make adjustments to mitigation, and assess impacts. In a revised draft EIS, BLM, in coordination with the U.S. Fish and Wildlife Service (FWS) as lead agency, should include a long-time baseline research and monitoring plan for the PCH and other caribou. Such plan should include accurate and updated baseline data and research on the population, habitat, and movements of the PCH	Effectiveness will be monitored to the extent practicable (or as required by the ROD) and can be adjusted if necessary. Herd monitoring will continue. This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
127.	Withheld	Withheld	World Wildlife Fund	81184	13	Terrestrial Mammals	BLM's draft EIS fails to include a rigorous analysis of the cumulative impacts of development on the Coastal Plain on caribou. The general background and descriptions of past activities do not suffice as sufficient analysis of the potential for cumulative effects from oil and gas activities on the Coastal Plain to adversely impact caribou. Adequate baseline data upon which future activities can be quantified and analyzed are missing and must be provided in a revised draft EIS. Further, there is no analysis of the cumulative impacts of development west of the Coastal Plain, in the range of the Central Arctic Herd. A revised draft EIS should analyze these foreseeable impacts, as the draft EIS itself states that further development in the range of the Central Arctic Herd may be necessary due to oil exploration in the Coastal Plain.	Additional maps of caribou distribution and discussion of cumulative impact by Russell and Gunn (2019) was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
128.	Withheld	Withheld	World Wildlife Fund	81184	15	Terrestrial Mammals	The mitigation measures recommended in the draft EIS underemphasize the importance of the herd's large aggregations. During the post-calving season, large aggregations of PCH caribou form, in numbers often exceeding 100,000, and move westward across the Coastal Plain. They often move outside of the boundaries of the Arctic Refuge in search of high-quality forage. Their ability to move unobstructed during the post-calving period is especially crucial. The draft EIS fails to adequately address the cumulative impacts of the proposed oil and gas activities and a revised draft EIS must address how these activities could obstruct the movement of the herd's large aggregations during the crucial post-calving period. This critique applies not only to the main oil and gas activities under consideration, but also to the potential infrastructure that may be constructed to the west of the Arctic Refuge to support industrial activities on the Coastal Plain.	Text on large post-calving aggregations was added.
129.	Todd	Campbell	Conservation Biology course	81185	8	Terrestrial Mammals	Wood bison are not mentioned in the ANWR but should be considered if they should choose to re-enter Alaska as they did in 2016	There are no wood bison in or close to the project area.
130.	Todd	Campbell	Conservation Biology course	81185	10	Terrestrial Mammals	There are two endemic species to ANWR including the marmot and Alaskan tiny shrew. Both have been found in the arctic refuge but are rarely spotted or seen. Distribution is known to be scattered. This doesn't mean these species aren't present in the construction zone- it's difficult to know for certain where they are and whether they'll be affected in that location. The alternatives should include regulations on these critical species.	The Alaska marmot or the Alaskan tiny shrew (reclassified as holarctic tiny shrew) are not endemic to the Refuge.

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131.	Withheld	Withheld	—	81307	2	Terrestrial Mammals	Many of these animals roam, particularly the caribou, which are constantly on the move. These oil and gas facilities will surely present obstacles to caribou movement. The width of the Coastal Plain in the 1002 area ranges from 15 to 35 miles. The width of the coastal plain near Prudhoe Bay is over 100 miles. There are much fewer animals in the Arctic herd and there is room for them to move at Prudhoe. However, the Coastal Plain is narrow in the 1002 Area and the Porcupine herd at over 200,000 caribou, is roughly 10 times larger than the Central Arctic Herd. A development the size of Prudhoe Bay (with its network of roads, power lines, pipelines, drilling pads, satellite fields pipeline pads, fences, noise, dust, etc.) in some places of the 1002 Area would block the entire width of the Coastal Plain with industry. The DEIS's analysis of impact falls far short of what is necessary to protect the Caribou. The DEIS does not appreciate or adequately analyze the differences between the between the 1002 habitat and the Prudhoe Bay habitat. Nor of the differences between the herds themselves.	The impacts of oil field development on caribou movements is discussed. Information on the narrower Coastal Plain in the Refuge was added.
132.	Janet	Jorgenson	—	81671	33	Terrestrial Mammals	Different vegetation types have different values for wildlife habitats and diversity of plant species. A review of wildlife literature should be done. For example, high-value habitats in the 1002 Area include riparian shrublands for many different species, wet herbaceous tundra for birds if adjacent to salt water or lakes, tussock tundra for caribou forage during the calving season, and moist herbaceous tundra (the non-acidic subtype) for high diversity of plant species. The DEIS lists percentages of area covered by different vegetation types for the different alternatives, but then leaves it at that. No effort is made to actually analyze which alternatives impact more or less habitat for different wildlife species.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
133.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	6	Terrestrial Mammals	collared cows have used ANWR every year since 1985 when the PCH were first collared. Collar data indicates that cows and calves spend the most time in ANWR during post-calving, in areas classified as medium to high hydrocarbon potential. Access to high quality forage found on the Coastal Plain supports the high energy demands of lactation and high movement rates associated with insect harassment. Like other barren-ground caribou herds, the PCH forms large aggregations in response to insect harassment. However, unlike other caribou herds on the Coastal Plain, these 'super groups' can include >120,000 caribou (more than half the herd). The larger the group, the denser they form and the faster they move, pushing the animals into an energy deficit. Movements of these aggregations are unpredictable but reflect the need for caribou to balance insect exposure with access to forage. If oil field infrastructure prevents or delays the movements of these 'super groups', caribou may experience a greater energy deficit resulting in poorer body condition and possible implications to herd productivity. Cows in poor body condition will prioritize their own survival and may wean their calves early and/or may not get pregnant in the fall.	Information on the size of post-calving groups and uncertainty in the response of large groups response to infrastructure was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
134.	Roberta	Joseph	Tr'ondek Hwech'in First Nation	81742	7	Terrestrial Mammals	In the draft EIS, the BLM often used the responses of the Central Arctic Herd (CAH) to oil and gas development in Prudhoe Bay to draw conclusions about possible impacts to the Porcupine Caribou Herd. Key differences between the herds indicate that it may be inappropriate use CAH data to draw conclusions about the PCH when considering impacts of development in ANWR. Notably, the PCH is likely the least productive of the large migratory herds in North America. In the absence of development, the herds' rate of growth or decline has never exceeded 5% in the past 40+ years. Additionally, PCH population numbers are known to be most sensitive to survival of adult females and calves, which in turn are most strongly influenced by spring and summer range conditions. Therefore, if development displaces Porcupine caribou from prime calving and post-calving habitat, we should expect herd productivity to be impacted to a greater degree than the Central Arctic Herd which is more influenced by fall conditions from the previous year. The Coastal Plain is also much narrower in the calving and post-calving range of the PCH, compared to the CAH. The wider Coastal Plain near Prudhoe Bay has allowed the CAH to avoid infrastructure while still remaining within suitable habitat. Porcupine Caribou, on the other hand, have less habitat available and, therefore, a greater chance of being displaced into the foothills of the Brooks Range or east into Canada.	Text on differences between herds was added
135.	Allison	Athens	—	81746	3	Terrestrial Mammals	Finally, we strongly urge BLM to consider the impacts of dividing a section of a Wildlife Refuge off from the rest of the Refuge for development and the impact this will have on migrating species who interact with other resources in other locations across Alaska	The impacts of alternatives on migrating species is discussed.

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136.	Allison	Athens	—	81746	14	Terrestrial Mammals	The Draft EIS lacks any analysis of impacts to the other areas of the Arctic National Wildlife Refuge, except the Molly Beattie Wilderness Area which abuts the Coastal Plain. Not only does the leasing of the Coastal Plain to oil and gas development impact the wilderness character and conservation goals of the Wildlife Refuge, it has a direct and material impact on the animals, birds, fish, plant-life, and ecosystem integrity of the area. Caribou and polar bears are migratory species that use multiple areas of the Arctic Refuge. Impacting these species in the Coastal Plain will have a ripple effect as the impacts to these populations interact with resources in other locations. BLM has not accounted for these other impacts across the entirety of these species migratory range across the Arctic Refuge, the Coastal Plain, and into other not protected areas.	Text on impacts associated with PCH herd size was added.
137.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	76	Terrestrial Mammals	The DEIS fails to adequately represent the PCH and Central Arctic Herd ("CAH") with maps and figures. The DEIS does not provide any maps showing the annual movement of the herds on a range-wide basis. The DEIS fails to provide a detailed breakdown of the full extent of calving, core calving, post-calving, and migration habitats of the PCH and CAH.	Additional maps of seasonal range were added

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138.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	77	Terrestrial Mammals	The DEIS fails to adequately address the general decline in caribou herds across the Arctic. As noted in the recently published Arctic Report Card, Arctic populations of caribou, also known in Eurasia as “wild reindeer” (both Rangifer tarandus), have decreased significantly.⁵² Overall, there has been a 56% decline (4.7 million to 2.1 million) over the last two decades. In the Alaska-Canada region, there has been a decline of more than 90%, and these populations show no sign of recovery. The CAH is among the herds that have suffered declines. The cause for the declines is not easily explained. Several factors have contributed to the decline of caribou in the Alaska-Canada region include forage availability, macro (worms and ectoparasites) and micro (viruses, bacteria, protozoa) parasites, predation (including human hunting), and climate change (an overarching factor). Several caribou populations in Canada have decreased to historically low levels, leading the Canadian federal government to designate them as “threatened.” It is significantly concerning that the DEIS makes little mention of overall decline in caribou herds across the Arctic.	Information on North American herd declines was added.

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139.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	78	Terrestrial Mammals	The DEIS fails to adequately analyze the impacts of development on the PCH, because its analysis is premised on an invalid assumption that the PCH will react to development just as the CAH has. Few caribou herds of the Arctic have had exposure to oil and gas development on the scale proposed by the DEIS. ⁵⁵ In Canada, caribou herds' exposure to development on the scale proposed in the DEIS has mostly been mineral development. In Russia, the experience has been with gas fields and reindeer herding. The CAH's experience in the Prudhoe Oil Fields is one of the few instances documented where caribou have been exposed to large-scale oil and gas development. The DEIS draws on the CAH's experience to extrapolate what the PCH will experience in the Program Area under the various development scenarios (i.e., DEIS alternatives). The extrapolations of the CAH's experience with development in the Prudhoe Bay Oil Fields to the PCH are invalid, both with respect to herd displacement during calving and in the post-calving period. ⁵⁶	As noted, the CAH is one of few herds with similar development experience. Additional text on differences between CAH and PCH was added.

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140.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	79	Terrestrial Mammals	First, the geography of the North Slope around the Prudhoe Oil Fields is a broad region that extends to the south. Displacement of caribou during calving in that area has allowed for the CAH to relocate to the south. ⁵⁷ The 1002 Area of the Coastal Plain is narrower north to south. Displacement of calving habitat in the Program Area based on historical uses would force the PCH to the east and south. To the south are the foothills of the Brooks Range, where there is low forage quality. Many studies have found that caribou select calving and post calving areas where there is high-quality forage. ⁵⁸ Not being able to access areas of high-quality foraging due to displacement from development will have a negative impact on the reproductive success of the PCH. The greater the displacement, the greater the likelihood of negative impacts on the reproductive success of the herd. ⁵⁹	The effect of displacement during calving is discussed. Additional text on narrow Coastal Plain in the Refuge was added.
141.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	80	Terrestrial Mammals	Estimates of displacement (i.e., the hypothetical scenario) in the DEIS are based on limited empirical data. Presumably the data are based on the CAH, which is different in size and in its use of the area than the PCH. As already noted, there is great uncertainty about the impacts of new infrastructure on the PCH's use of the calving and post-calving areas.	Additional text on the movements of large PCH groups through infrastructure during post-calving was added.
142.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	81	Terrestrial Mammals	While the DEIS contains considerable discussion on calving grounds, the DEIS fails to adequately consider the importance of post-calving habitat. It is during the post-calving period that caribou feed, nurse calves, and add fat that allows for ongoing lactation. During post-calving, cows put on the weight needed to have the sufficient fat reserves to conceive the following Fall.	Additional maps of PCH movements was added.

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143.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	82	Terrestrial Mammals	Groupings of CAH caribou during post-calving aggregations are significantly smaller in number than those of the PCH. There is no basis for the DEIS to assume that the PCH, which aggregate in much larger numbers during post-calving, will respond to infrastructure during post-calving like the CAH does. The impacts of infrastructure would be far greater than is described in the DEIS.	Additional text on the movements of large PCH groups during post-calving was added.
144.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	83	Terrestrial Mammals	Finally, because of the nature of PCH migration patterns to and from calving groups, there is significant potential that displacement and interaction with infrastructure could dramatically alter migration patterns. Such changes could have implications to subsistence communities' access to caribou outside of the Coastal Plain.	Additional text on possibility of changing distribution was added.
145.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	84	Terrestrial Mammals	The DEIS fails to include a rigorous analysis of the potential effects to the PCH and its subsistence users. The DEIS's analysis of impacts to caribou is mostly qualitative and is not thorough. Modern-day science methods on impact assessment, cumulative effects, and wildlife ecology have made major advancements in assessing risks and possible impacts to wildlife resources. While all assessments come with uncertainties, there are tools that are valuable for informing policy decisions. The DEIS's analysis of impacts to caribou is deficient because of the absence of any assessment tools (e.g., simulation modeling) or reference to such tools. ⁶⁰	Discussion of cumulative impact by Russell and Gunn (2019) was added.

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146.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	85	Terrestrial Mammals	One of the findings of the Russell & Gunn (2019) analysis and other research ⁶¹ on caribou is that exposure to development, through interactions with infrastructure and/or displacement from sensitive/important habitat, reduces the resilience of the herd, making it more likely that the herd would not rebound from fluxes in population. The loss of herd resilience causes hardship for communities dependent on caribou by reducing or eliminating those subsistence resources. Loss of herd resilience would have significant impacts on Arctic Village and Venetie. These reductions would result in food insecurities, health issues, and a host of other social, cultural, physical, and economic problems. It is difficult to quantify the psycho-social and cultural impacts of such a situation. Nevertheless, significant shortfalls in caribou harvests would result in impacts on Gwich'in society, well-being, and culture. The DEIS fails to provide adequate analysis of such "cascading effects."	Text has been revised for clarification.
147.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	86	Terrestrial Mammals	The DEIS provides no empirical evidence that the mitigation measures designed to reduce impacts to caribou will be effective. Apart from elevated pipelines, the stated effectiveness of mitigation measures are, at best, speculative. Furthermore, the DEIS states that mitigation measures are subject to waiver, exception, or modification by the managing agency. Yet, the DEIS does not specify the criteria for granting waivers, exceptions, or modifications. The lack of specific guidelines opens the possibility for the BLM to arbitrarily enforce mitigation measures. This seriously undermines the effectiveness of mitigation measures included in the DEIS.	ROPs and stipulations are designed with the best available information. Effectiveness will be monitored to the extent practicable (or as required by the ROD) and can be adjusted if necessary. Operators are required to submit a written request for an Exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
147. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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148.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	87	Terrestrial Mammals	The DEIS fails to account for possible changes in the behavior of caribou that may result from development and increased hunting due to increases in population in Kaktovik. (DEIS, at 3-172). Caribou avoidance of and exposure to development areas can decrease their summer range by 30%. The DEIS also fails to include any discussion of threshold effects, both possible and likely. ⁶²	Additional text on the impact of hunting on caribou response to infrastructure was added.
149.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	88	Terrestrial Mammals	The DEIS fails to adequately analyze the cumulative impact of development and climate change on caribou. Climate data show an increase in the number of growing degree days, which may contribute to caribou in positive ways. ⁶³ Data also show an increase of rain-on-snow events, and modeled projections show that icing events are likely to increase in frequency in the future. ⁶⁴ Icing events have had dramatic negative impacts on herd populations in the range of the PCH and other regions, as documented in studies ⁶⁵ and traditional knowledge. Such events coupled with development would increase the vulnerabilities of the PCH and, consequently, the vulnerabilities of the people who depend upon it. These consequences could be catastrophic:	Potential effects of climate change are discussed. New information on frequency of rain on snow events was added. Decline in North American herds possibly as a result of climate was added.
150.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	90	Terrestrial Mammals	The DEIS's analysis of climate change impacts to caribou is flawed because it limits its discussion of caribou ecology to the Program Area. (DEIS, at 3-168). For example, the DEIS fails to consider changes in the boreal forest, which has the potential to affect caribou abundance and distributions.	The discussion of climate effects is not limited to the Program Area. Effect of wildfires was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
151.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	91	Terrestrial Mammals	The DEIS fails to provide any in-depth inter-annual analysis of herd distribution and movements. Studies show that caribou access to the Program Area is important to the PCH's ability to overcome negative impacts of severe winters. As noted by Russell & Gunn (2019), "[i]f denied access to [the] 1002 due to cows' sensitivity to development, on average, calf survival would be reduced by 9%." Over the course of years, this negative impact, along with others such as icing events, would tip the balance of the PCH's population to cause a significant decline	Information from Russell and Gunn (2019) was added.
152.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	92	Terrestrial Mammals	The PCH distribution and movements have been documented since the 1970s, well before the use of radio satellite collars. ⁶⁷ The PCH has also been considered the "most studied" caribou herd in the world, based primarily on interest in development since the early studies. ⁶⁸ As noted above, caribou select habitat based on environmental conditions. Data show that in some years, the PCH has used the far western portions of the Program Area for calving and post-calving. With climate change affecting environmental conditions in the Arctic, areas used infrequently in the past may become critical use areas in the future. Given the state of rapid direction change in ecosystems across the Arctic, there is significant uncertainty regarding the future habitat needs of the PCH and the CAH. The DEIS must therefore include all distribution and movement data, even if not based on the more modern (radio satellite collars) methods, in its analysis. The DEIS's failure to do so makes its analysis deficient.	The Draft EIS discusses the potential for PCH to calve farther west with climate change and the importance of flexibility of calving location for the herd.

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153.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	94	Terrestrial Mammals	The program area is outside the primary range of the Teshekpuk herd, although an estimated 5,000-10,000 caribou of the Teshekpuk herd moved into the northern portion of the Arctic Refuge in the fall of 2003 (Person et al. 2007; USFWS 2015a); that unprecedented movement was highly unusual and has not been repeated. (DEIS, at 3-104). This is incorrect. Given the relatively short duration that the distribution and movements of these herds have been monitored, this sentence suggests that in certain environmental conditions the herd selects that area as its habitat. To say it is unusual implies that it is not important. In fact, it may be critical in certain years to the herd's reproductive success. Additionally, the DEIS's discussion on baseline conditions of the CAH is brief, incomplete, and must be elaborated upon. Indeed, the DEIS provides no qualitative representation of the frequency in which the western portions of the Coastal Plain are used by the CAH during post calving. (DEIS, at 3-107)	TCH animals using the 1002 area during 2003-2004 had low survival (Carroll 2005) and did not return suggesting this is not important habitat for the herd. Additional information on CAH use of the area was added. (Carroll, G. 2005. Unit 26A caribou management report. Pages 246–268 in C. Brown, editor. Caribou management report of survey and inventory activities 1 July 2002–30 June 2004. Alaska Department of Fish and Game. Juneau, Alaska.)
154.	Withheld	Withheld	—	81851	1	Terrestrial Mammals	Fourthly, the DEIS fails to fully assess the significant impacts oil leasing and development would have on caribou, especially when caribou are most vulnerable to disturbance—during critical times of calving and raising young. Oil leasing and development on the Coastal Plain would cause caribou populations to decline, which in turn will have significant ramifications over a vast area of Alaska and Canada. Moreover, these destructive effects would persist beyond the estimated 130 years of exploitation.	The potential displacement of PCH calving caribou and potential impacts on calf survival are discussed.

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155.	Withheld	Withheld	—	82285	1	Terrestrial Mammals	The DEIS fails to fully assess the significant impacts oil leasing and development would have on caribou, especially during critical times of calving and raising young. We have visited the Arctic Refuge and came to understand how the great caribou herds move throughout the area as they seek refuge from weather, biting flies, and predators, especially during calving time. The ability of caribou to move freely to find refuge and the most nutritious forage is absolutely vital to the continued health of the herds. While adult male caribou have sometimes appeared to habituate to development at Prudhoe Bay, cows and calves are much more sensitive and avoid roads and other human disturbances. Caribou, especially nursing cows, have been making the long journey to the Arctic Refuge for hundreds of thousands of years for the abundant, nutritious green vegetation found nowhere else in their range	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.
156.	Withheld	Withheld	—	82848	5	Terrestrial Mammals	While the EIS acknowledges that sensitive calving grounds for the porcupine caribou herd fall within the proposed leasing area, the EIS does not adequately consider how leasing activities may reduce calving success and provide sufficient mitigation options.	The potential displacement of PCH calving caribou and potential impacts on calf survival are discussed.
157.	Withheld	Withheld	—	82848	6	Terrestrial Mammals	he EIS fails to discuss the potential impact of leasing on wolverines in any great detail- which is of concern because wolverines are of special cultural and importance to Native Alaskan groups.	Additional text on wolverines added

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
158.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	4	Terrestrial Mammals	Second, the EIS should include the size and health of the PCH. A recent July 2017 survey estimates the PCH at 218,000 animals ⁷ , a record high since population monitoring first began in the 1970s by the ADFG ⁸ . It should be detailed in the EIS that caribou populations do decline to what their habitat can support. Given the PCH is at its largest since monitoring began, it is reasonable to assume that the herd may decline in the foreseeable future. BLM should document this phenomenon in the EIS.	The population size of the PCH is discussed in the EIS. Text on cyclical nature of caribou was added. It is difficult to predict maximum herd size.
159.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	5	Terrestrial Mammals	ASRC encourages BLM to use more recent data on calving of the PCH to more accurately depict the PCH use of the Coastal Plain for calving. As ASRC highlighted in our scoping comments, the PCH are versatile in their calving and migration patterns across Northern Alaska and Northwest Canada. Within the past twenty years there was a decade when the PCH did not even calve in the Coastal Plain, and in recent years when the PCH did use the Coastal Plain for calving, it did not use the Coastal Plain exclusively. From the 2015 Arctic National Wildlife Refuge Comprehensive Conservation Plan, "Between 2002 and 2009, no estimates of abundance were available. During this period, caribou left the coastal plain and the northern foothills of the Arctic Refuge earlier and did not form large post-calving aggregation..." ⁹ And again, "In 7 of 11 years during 2004-2014, calving occurred on the coastal plain, primarily in the Yukon between the Alaska-Canada border and the Babbage River. In the other 4 years, calving occurred both in Alaska and Canada, and some calving occurred in the 1002 area during 3 of those years"	The PCH maps are current, but additional maps and information on time period of maps were added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
160.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	6	Terrestrial Mammals	BLM should include in their analysis that the PCH do not reliably calve in the Program Area each year and that the entire Program Area is a very small portion of their entire calving region. To clarify this, BLM should include the following: "For the past few decades, the Porcupine caribou herd has calved in a region encompassed the arctic foothills and the coastal plain from the Canning River in the Arctic Refuge to the Babbage River in Canada, an area of nearly 8.9 million ac (Griffith et al. 2002)...during 2000-2010, concentrated calving areas were in the Yukon or near the USACanada border ... this variability indicates that the Porcupine caribou herd needs a large region from which the best conditions for calving can be selected in a given year." 11 To put this in perspective, the entire Program Area makes up a mere 16.8% of the entire PCH calving area. In other words, roughly 83 % of the PCH calving habitat is entirely outside of the Program Area. This information provides additional insight into the variability in the PCH calving and their use of the Program Area.	The Draft EIS discusses the frequency and patterns in calving in Alaska. The overall size of the calving extent was added
161.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	9	Terrestrial Mammals	BLM should also include that eco-tourists who travel in and around the Program Area to witness the PCH migration and calving also cause impacts. Local hunters in Kaktovik are growing concerned that these "viewing parties" are deflecting PCH leaders and may be the cause of the PCH limited calving in the Program Area. BLM should address these impacts in their EIS.	Text has been added to consider this as part of a cumulative effect of disturbance.
162.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	10	Terrestrial Mammals	BLM should highlight that despite concerns over the decimation of the caribou population, caribou do continue to inhabit areas where industry is present. From the DEIS ANILCA 810 Analysis: "Caribou could still forage within the total footprint of a CPF and its associated satellite well pads, for example."	The use of areas near active infrastructure varies widely by season as discussed in the Draft EIS.

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163.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	11	Terrestrial Mammals	Coastal Plain and ANWR calve in Prudhoe Bay area, one of the most prolific onshore oil and gas developments in the U.S. Both the PCH and CAH also experience a degree of "mixing" ¹⁵ , in other words, it is likely that members of the PCH may calve and migrate through Prudhoe Bay with the CAH and vice versa. Despite the presence of oil and gas infrastructure and development, the populations of all three herds are at higher levels than when development first began.	The frequency of PCH caribou joining the CAH appears to be low (Prichard 2015). The increase in CAH following development is discussed. Prichard, A.K. 2015. Section 9. caribou distribution, habitat use, and herd fidelity. In Shell onshore/nearshore environmental studies, 2015. Macander, M.J., G.V. Frost, and S.M. Murphy (eds). Final Report Prepared by ABR—Environmental Research & Services. 344 pages
164.	Withheld	Withheld	Arctic Slope Regional Corporation	83317	12	Terrestrial Mammals	in addition to the PCH, both people of Kaktovik ⁴ and the Gwich'in of Arctic Village and Venetie ⁵ harvest from the Central Arctic Herd (CAH) which calve in Prudhoe Bay area and the PCH. This is in part due to the fact that "[T]here is a lot of mixing between the Teshekpuk, Central Arctic, and Porcupine herds." ⁶ The mixing of the herds is an important detail which showcases the intersectionality of the herds that may lead to members of the PCH calving in industrialized areas and members of other herds being harvested by both the Iñupiat and Gwich'in. It should be noted in the EIS that although the PCH is an important resource for both the Gwich'in and Iñupiat people, it is not the only herd which is harvested by Alaska Natives in and around ANWR.	The frequency of PCH caribou joining CAH appears to be low, but CAH joining PCH is more common (Prichard 2015). Prichard, A.K. 2015. Section 9. caribou distribution, habitat use, and herd fidelity. In Shell onshore/nearshore environmental studies, 2015. Macander, M.J., G.V. Frost, and S.M. Murphy (eds). Final Report Prepared by ABR—Environmental Research & Services. 344 pages

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165.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	6	Terrestrial Mammals	VOICE has outlined the need for the BLM to summarize the health of the Central Arctic Herd, which migrate within the bounds of the Prudhoe Bay and Kuparuk Oilfields unimpeded and calve near development infrastructure in a subsequent section, titled "Caribou," to provide clarity and rationality around the fear that the Porcupine Caribou Herd would be devastated if leasing and development were to occur in the Coastal Plain. The CAH has more than quadrupled in size since development began on the North Slope ¹ and the herd is healthy.	The Draft EIS discusses the fact that the CAH appears to have been displaced by about 4 km during calving, but has alternative calving grounds and has increased in size despite development.
166.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	18	Terrestrial Mammals	VOICE realizes that Caribou are one of the most important resources to use the Coastal Plain and are central to the subsistence lifestyles of both the Kaktovik Iñupiat and Gwich'in communities south of the Brooks Range and in Canada. We are generally pleased with the careful analysis of potential impacts to Cari-bou, however, we feel that the DEIS did not address several important issues that are critical to understanding this resource and how it interacts with the Program Area. 1. The data presented in the maps is not referenced and demonstrated clearly; 2. The DEIS must acknowledge that the Kaktovikmiut and the Gwich'in harvest from both the Central Arctic Herd (CAH) and the Porcupine Caribou Herd (PCH); 3. The entire range of the PCH was not taken into consideration, including the areas of the Canadian Arctic the PCH uses for calving as well as the development and infrastructure that the PCH migrate successfully through and around in Canada; 4. The health of the PCH, which are currently nearing potential peak population; and 5. The lack of Traditional Knowledge	Additional maps and details of maps were added. Information on mixing of herds was added.

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167.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	19	Terrestrial Mammals	First, throughout the document, there are instances of unclear or missing references to what data used and how it was analyzed. We prefer the format 2013 NPR-A IAP/EIS that clearly introduces and explains the data used in each section to provide clarity and transparency throughout the EIS and the associated analysis. Of particular concern, is that the Caribou Maps (Maps 3-21, 3-23, and E-1) do not provide any information on the source of origin beyond the date the GIS was mapped. There is no information on who collected the data nor what years are presented. Further, the maps are not consistent with the maps on the PCH that we have seen from Alaska Department of Fish and Game ¹² , which monitors the Porcupine Caribou Herd, nor the Fish and Wildlife Service's (FWS) 2015 Comprehensive Conservation Plan (CCP) ¹³ for the Refuge, both of which show that in recent years, the PCH reliance on the Coastal Plain for calving is generally decreasing. This supports the Traditional Knowledge that hunters from Kaktovik have shared; that they have noticed changes in the PCH movements on the calving grounds and they do not come near the village of Kaktovik in their migration, preferring to remain in the foothills of the Brooks Range to calve before continuing on their migration.	Additional details for maps were added. The PCH calved in Alaska for many year, did not calve in AK for a long period, and has calved in AK in some recent years. The available data suggest there are decadal patterns related to weather patterns, not linear trends.
168.	Sayers	Tuzroyluk	Voice of the Arctic Iñupiat	83318	20	Terrestrial Mammals	We feel that the way the DEIS displays caribou data in the maps is likewise misleading. Aggregating data and presenting it cumulatively as it is presented in the DEIS misleads how dedicated the PCH are to the Coastal Plain, the versatility of the PCH, and how varied they are in their calving and migration patterns.	Additional maps were added.

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169.	Sayers	Tuzroyluk	Voice of the Arctic Inupiat	83318	22	Terrestrial Mammals	The BLM should also expand the maps included in the DEIS to show both the Program Area and the Canadian Arctic. As displayed in the DEIS, one might think that the PCH only uses the 1002 Area for calving, which is clearly untrue. VOICE prefers the below format used in the CCP to present caribou data and PCH calving patterns: ---image---	Additional maps were added.
170.	Matt	Krogh	Stand.earth	83321	10	Terrestrial Mammals	Given its use of outdated studies, the DEIS fails to account for the latest science on climate impacts to the Arctic. For example, "Despite increase of vegetation available for grazing, herd populations of caribou and wild reindeer across the Arctic tundra have declined by nearly 50% over the last two decades." (NOAA 2018 Report Card on the Arctic). While the population of the Porcupine Caribou Herd is increasing, the overall trend of the caribou species decline should be a reminder and warning of the likely fate of Porcupine caribou if protective action is not taken.	Information of North American caribou declines was added.
171.	Withheld	Withheld	—	83335	2	Terrestrial Mammals	Alternatives B, C, and D would affect critical calving and post-calving habitat for the Porcupine Caribou Herd which has been inextricably tied to the Gwich'in people for millennia. The BLM acknowledges that "oil and gas activities will likely disturb and displace caribou, especially sensitive cows and calves." Map 3-21 shows the Porcupine Caribou Herd (PCH) calving and post-calving covering most of the Coastal Plain (Vol. 2, 3-21). I feel that the Draft EIS fails to address impacts to the PCH when they are most sensitive. Even the most restrictive alternative only "halts major construction activities, but not drilling, for a single month of the year when caribou are calving." (Vol.1, p. 2-13)	The claim that the most restrictive alternative only halts major construction activities, but not drilling for a month is incorrect. This text is from Alternative B, other alternatives have additional stipulations.
172.	Byron	Sansom	—	83569	1	Terrestrial Mammals	The Porcupine Caribou Herd calving ground is on the coastal plain of the refuge. One quarter of the calves born there may die within 3 weeks of birth. Any human disturbance of this area risks increased caribou calve mortality.	The Draft EIS discussed the calving distribution of the CAH and potential impacts from development.

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173.	Julia	Wagner	—	83570	4	Terrestrial Mammals	Caribou are very sensitive to all infrastructure, pipelines, and noise. It has been seen that caribou stay away from infrastructure up to 20 miles but the Draft EIS calculates with an extremely low displacement of 2.49 miles (3-112). The coast which is important for caribou for insect relief due to windier conditions has in the best alternative for caribou, B, only a 2 miles zone of no infrastructure. The possibility to move over long distances between the nutrient-rich areas and the windier coast in the post-calving period to avoid insect harassment and blood loss (a caribou can lose up to 125 gram per day from insects) will be hindered, which can lead to illnesses and higher mortality. At the same time, due to new roads in the area, predators from the hillier areas southwards, can get more easily in the Coastal Plain, becoming a greater risk for the caribou herd, especially the cows and calves. Another danger for the mortality is the possibility of invasive species that normally comes along with human presence and more access, roads and vehicles, altering the vegetation and causing illnesses.	The observed displacement distance from oil infrastructure and other types of development and importance of coastal zones (and ridgetops) for insect relief is discussed.
174.	Harold	Spence	—	84230	2	Terrestrial Mammals	Mitigation measures required by law to be considered and analyzed are essentially absent. What about the impact to caribou habitat, which covers around 40 percent of the Coastal Plain? The proposed suspending of operations for one month a year is a joke.	The potential displacement of calving caribou is discussed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
175.	Withheld	Withheld	—	84578	1	Terrestrial Mammals	he DEIS fails to adequately address impacts to the Porcupine Caribou Herd and to consider the full range of areas and length of time that the coastal plain is critically important to caribou for calving, feeding, and avoiding predators. Providing necessary habitat and respecting the interests of other U.S. citizens, states, and nations is necessary especially as natural habitat diminishes throughout the world. The DEIS offers too much of the area for lease sales and does not specify critical habitats for the many species that use this area.	The comment does not include a specific recommendation
176.	Withheld	Withheld	—	84732	3	Terrestrial Mammals	On page 174 you have referenced the need to protect caribou and calves in the insect relief areas which is critical to their survival. Trucks rumbling along on the tundra are going to disturb the caribou, they have never seen vehicular traffic. On page 43, "With in calving habitat area, May 20-June 20, traffic speed should not exceed 15 mph when caribou are within 0.5 miles of road. Really? Who will be present to enforce that rule? Shouldn't it say "will not" instead of should not?	The effect of vehicle traffic on caribou was discussed.
177.	Withheld	Withheld	Resource Development Council	85053	3	Terrestrial Mammals	It should also be noted that open land between industry facilities and along field infrastructure, including roads and pipelines, would remain available as wildlife habitat, which is the case in other North Slope oil fields where caribou and other animals graze and feed on open tundra	The avoidance or use of areas near infrastructure by caribou varies by season as discussed in the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
178.	Withheld	Withheld	WWF-Canada	85059	9	Terrestrial Mammals	Further, although the draft EIS contains several required operating procedures and lease stipulations, these mitigation measures are accompanied by the possibility of waivers, exceptions, and modifications, weakening them and decreasing the likelihood of sufficient protection for the PCH.	Operators are required to submit a written request for an Exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
178. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	then provided with a written notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
179.	Withheld	Withheld	WWF-Canada	85059	10	Terrestrial Mammals	The mitigation measures recommended in the draft EIS do not adequately acknowledge the importance of the herd's large aggregations. During the post-calving season (as mentioned earlier), large aggregations of PCH caribou form, often over 100,000. They move westward across the Coastal Plain and often move outside the boundaries of the Arctic Refuge in search of high-quality forage. Their ability to move unobstructed during this post-calving period is especially crucial. The draft EIS fails to adequately address the cumulative impacts of the proposed oil and gas activities and how these could affect the herd's large aggregations. A revised draft EIS must address how these activities could obstruct the movement of the herd's large aggregations during the crucial post-calving period. This critique applies not only to the main oil and gas activities under consideration, but also to the potential infrastructure that may be constructed to the west of the Arctic Refuge to support the original oil and gas activities on the Coastal Plain.	Additional text on uncertainty regarding large post-calving groups was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
180.	Caitlin	Lenahan	—	87651	3	Terrestrial Mammals	In regards to the caribou herd and their health, the Coastal Plain provides vital calving and post-calving habitat for the Porcupine Caribou Herd. The Coastal Plain offers nutrient rich forage, protection from predators, and relief from the relentless insects of the Arctic. The Porcupine Caribou Herd use all of the Coastal Plain for various habitat needs during its annual migration. The BLM acknowledges that oil and gas activities will likely disturb and displace caribou, especially sensitive cows and calves. Map 3-21 shows Porcupine Caribou Herd calving and post-calving covering most of the Coastal Plain (Vol. 2, 3-21). BLM estimates that only 49% of the Coastal Plain is sensitive calving grounds for the PCH, but this vastly undercounts the value of the coastal plain to the caribou, who use essentially all of the Coastal Plain during calving and post-calving when they are sensitive to disturbance. The agency fails to adequately address these impacts and to consider the full range of areas that are important to caribou. Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival (Vol 1, p. 3-114) and in fact would likely halt population growth (Vol 1, p. 3-115). Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation. The DEIS offers insufficient mitigation of the impacts to Porcupine Caribou Herd. Even the most restrictive alternative only halts "major construction activities"—but not drilling—for a single month of the year when caribou are calving (Vol 1, 2-13).	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area. The claim that the most restrictive alternative only halts major construction activities, but not drilling for a month is incorrect. This text is from Alternative B, other alternatives have additional stipulations.

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181.	Kenneth	Whitten	—	89206	1	Terrestrial Mammals	First, I see a major problem with how “calving” is defined, both chronologically and geographically. The DEIS uses June 10 as the end of the calving period. While it is true that most calves are born by June 10, there are still some calves being born until at least June 21. But the real problem in the DEIS comes when mitigation measures designed to protect cow caribou with young calves are applied only to the May 26 – June 10 time period. Although this may be when most (but not all) calves are born, it does not correspond to the period when cows and calves are particularly vulnerable to disturbance. For example, cows and calves avoided the Trans Alaska Pipeline and structures within the North Slope oilfields throughout the summer, although the degree of avoidance may have lessened somewhat later in the summer, particularly during periods of severe insect harassment. Therefore, it makes no sense to delineate areas requiring special calving related mitigation measures solely based on caribou occupancy during the June 1-10 period. Also, the maps used to define caribou calving appear to be based on location of birth sites. As such they fail to account for continued movement after calves are born. In general, there is continued movement of caribou both into and within the Refuge Coastal Plain throughout the calving period. Thus, the area actually used by cows with young calves even during the May 26 – June 10 period would include areas farther west and north than the maps show, and the proportion of parturient cows using the area during calving would be greater than the DEIS analysis suggests. These discrepancies would be even more marked if a more reasonable calving period, extending at least through June 20, were used. The caribou calving discussion in the DEIS should be rewritten to take these factors into	The calving period is defined as ending on June 10 for maps, but stipulations regarding calving extend longer. Additional maps of caribou movements were added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
181. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	account. I also see a problem in assuming that the importance of different sections of the Refuge Coastal Plain for calving can be described in terms of the proportion of years in which those sections are used by calving caribou. When the Coastal Plain has not been used for calving, it is primarily because late melting or persistent snow cover rendered it unsuitable. Portions of the Coastal Plain as far west as the Sadlerochit River have been very heavily used in years when they were snow-free. I fail to see how those areas cannot be considered important when very large numbers use them on occasion. Rather, I believe that all portions of the Coastal Plain used for calving should be considered critical calving habitat and should receive appropriate protection. A high level of protection for calving caribou should also apply to the far western Coastal Plain, which is historic calving habitat for the Central Arctic Caribou herd.	(see above)
182.	Kenneth	Whitten	—	89206	2	Terrestrial Mammals	Second, I would argue that for the reasons stated above, the postcalving period should more reasonably start on June 21 rather than June 10. Regardless of how you define postcalving, however, the DEIS does not adequately address that, over time, the entire Coastal Plain has been heavily by caribou during the postcalving period. As with the discussion of calving habitats above, areas that are used relatively infrequently but are occasionally occupied by nearly the entire herd should also be considered important. For example, I have personally seen over 100,000 caribou in the Canning River delta area at the far western boundary of the Coastal Plain. Mitigation designed to protect postcalving caribou should be applied to the entire Coastal Plain.	Additional maps of caribou seasonal movements were added.

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183.	Kenneth	Whitten	—	89206	3	Terrestrial Mammals	The DEIS acknowledges that calving was very quickly displaced from the Prudhoe Bay Oilfield, but It does not adequately acknowledge that since the mid-1990s calving has also been displaced from the Kuparuk Oilfield.	The Draft EIS discussed calving displacement from the Kuparuk Oil Field. Some calving still occurs in the Kuparuk Oilfield.
184.	Kenneth	Whitten	—	89206	4	Terrestrial Mammals	These displacements are an order of magnitude greater than the displacements from infrastructure mentioned in the DEIS (10s of kilometers rather than a just a few kilometers). Furthermore, the DEIS does not acknowledge that, with rare exceptions, almost all use of the existing oilfields ceased by the early 2000s, even during the postcalving period. References in the DEIS to impacts on caribou movements and distribution come from studies in the late 1970s and 1980s, when oilfield infrastructure had not yet reached its current extent and at least some caribou were still using the area. As such, they don't account for the more regional abandonment of the oilfields in later years.	Multiple sources identify calving displacement from the Kuparuk Oilfield as 2-6 km (Dau and Cameron 1986, Cameron et al. 1992, Lawhead et al. 2004). The Kuparuk Oilfield is still used extensively by the western calving segment of the CAH during the post-calving, mosquito and oestrid fly periods (Murphy and Lawhead 2000, Arthur and Del Vecchio 2009, Lenart 2015, Nicholson et al. 2016).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
185.	Kenneth	Whitten	—	89206	5	Terrestrial Mammals	I don't dispute that some mitigation measures such as increased pipe height and separation of roads from pipes may have lessened impacts, at least in the short term. However, these and other measures certainly did not eliminate impacts. I would argue instead that there are no data to support a conclusion that any mitigation measures have so far been effective in providing free passage and unhindered habitat use by caribou in Alaska's arctic oilfields. In fact, existing data are far more supportive of a conclusion that development of the Arctic Refuge Coastal Plain at a scale commensurate with the economic goals of the recent tax law legislation would result in a major displacement of caribou from their historically preferred habitats, with severe adverse impacts to the caribou population. Specific comments on the various caribou related mitigation measures in the DEIS are thus moot, other than to say they haven't been demonstrated to be effective.	Displacement of calving caribou is discussed in the EIS. The experience of the CAH in the Kuparuk Oil Field indicates that caribou can continue to move through an oil field with mitigation measures during mid-summer to reach insect-relief habitat. Differences between the PCH and CAH was discussed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
186.	Kenneth	Whitten	—	89206	6	Terrestrial Mammals	The response of the Central Arctic Caribou Herd to oil development on the North Slope was to eventually abandon the oilfield areas. There were occasional adverse impacts documented along the way to eventual abandonment—reduced weight gain, lower birth rates, and lower calf survival among cows using the impacted areas as opposed to cows using unaffected areas. The DEIS largely glosses over this. The DEIS acknowledges that various biological and geographical factors suggest that Porcupine Herd caribou (and portions of the Central Arctic Herd) using the Refuge Coastal Plain may be more vulnerable to disturbance than were caribou around the existing North Slope oilfields. Yet the DEIS concludes that development could nevertheless occur over most of the Coastal Plain and impacts could be mitigated, using measures that have not been proven effective elsewhere. The entire DEIS discussion on caribou needs to be rewritten, including a much more thorough analysis of mitigation failures in the existing North Slope oilfields and a more honest discussion of the likely adverse and longterm impacts on caribou.	The CAH has not abandoned the Kuparuk Oil Field, there is significant displacement during calving, but the western calving segment of the CAH continues to use the area extensively during mid-summer moving through the oilfield sometimes multiple times per day. There is some evidence of lower weights (although not lower weight gain) for calves born on the west side (Arthur and Del Vecchio 2009) and lower parturition rates for the west side in some years (Cameron et al. 2005), although parturition rates have been more similar in recent years (Lenart 2015). Arthur and Del Vecchio (2009) did not show significantly lower calf survival for the west side. I197
187.	Withheld	Withheld	Friends of Alaska National Wildlife Refuges	90981	4	Terrestrial Mammals	The DEIS failed to provide effective mitigation measures even though the DEIS acknowledged that the proposed oil leasing could disrupt 633,000 acres of caribou habitat, which is 40% of the Coastal Plain. Its proposed mitigation strategy to continue drilling and suspend “major construction activities” for only a single month of the year is severely insufficient.	That is a mitigation measure for Alternative B. There are other mitigation measures in B and stronger mitigation measures in Alternatives C and D.
188.	Janee	Middlesworth	—	91927	2	Terrestrial Mammals	The DEIS fails to assess the significant impacts oil leasing and development will have on caribou, especially when caribou are most vulnerable to disturbance—during critical times of calving and raising young.	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
189.	Withheld	Withheld	—	92034	5	Terrestrial Mammals	The Coastal Plain of the Arctic National Wildlife Refuge that is proposed for oil and gas leases provides vital calving and post-calving habitat for the 200,000 animals of the Porcupine Caribou Herd.. The Porcupine Caribou Herd depends on the unique ecological resources of the entire Coastal Plain during its annual migration and calving. BLM acknowledged that oil and gas activities will likely disturb and displace caribou, especially sensitive mothers and their young. However, BLM failed to adequately address the impacts on caribou and failed to consider the full range of areas and habitats that are vital to caribou during their annual migration.	The distribution of caribou and impacts from potential calving displacement are discussed in the EIS and additional caribou maps were added.
190.	Withheld	Withheld	—	92581	4	Terrestrial Mammals	The Draft EIS does not provide a serious analyses of the impacts to wildlife. In the Draft EIS, BLM acknowledges that oil and gas activities will disturb and displace caribou, especially sensitive mothers and their young but does not adequately address the impacts on caribou. The DEIS does not consider the full range of areas and habitats that are vital to caribou during their annual migration and it should.	The distribution of caribou and impacts from potential calving displacement are discussed in the EIS and additional caribou maps were added.
191.	Withheld	Withheld	Government of the Northwest Territories	92862	4	Terrestrial Mammals	There is a lack of quantitative analysis of the CAH data to look at zone of influence of development and potential distribution changes to the herd. These changes may impact users of the herd, as well as the herd itself.	Additional information on impacts to the CAH was added

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	Withheld	Withheld	Government of the Northwest Territories	92862	6	Terrestrial Mammals	The Sensitive Habitats Report (PBTC 1993) released by the International Porcupine Caribou Board (IPCB) recognized the calving and post-calving periods (1 June to 30 June) as the most sensitive periods based on a series of criteria. Caribou are highly vulnerable in the days immediately prior to calving and during calving and the post-calving period, and disturbance impacts associated with industrial activities typically disrupt caribou calving behavior and negatively impact calf production, cow-calf bonding as well as increase potential for calf and cow mortality. While the EIS does state the importance of the calving and post-calving habitat for the PCH, the GNWT believes the EIS needs additional evidence to quantify risks to caribou. Areas of additional review/analysis on this topic should include: * Conducting a quantitative analysis of PCH use of the area using all the collar data that includes the objective of Lease Stipulation 9 to "minimize the hindrance or alternation of caribou movements in coastal insect relief areas" - this implies only coastal areas are used in that period; implication of the formation of large aggregations and their response to disturbance. * Consideration of the report, jointly commissioned by the Yukon Government, the Government of Canada (Canadian Wildlife Service) and the GNWT that conducted a quantitative analysis of PCH movements to determine potential impacts to the herd (Russell and Gunn, 2019) in the BLM's assessment of potential impacts. Provide a comprehensive review of temporal and spatial development on the Alaska North Slope for consideration in the cumulative impacts assessment. Provide quantitative evidence for effectiveness of mitigations in the range of the central Arctic caribou herd (CAH) from over 40 years of development. Provide a more in-depth consideration of the differences	Level of specificity for this would be determined at the project level authorizations. Site-specific analysis, including quantitative analyses and those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. 1.9.1 has been revised to provide clarity to 2,000 acres of surface development.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	between the CAH and the PCH and how the potential impacts of development could differ between the herds. Re-examination of the definition of what is included in the 2000 acre surface facility limit on the footprint.	(see above)
193.	Withheld	Withheld	Government of the Northwest Territories	92862	12	Terrestrial Mammals	As well, the draft EIS does not properly or fully analyze the significant potential impacts of the leasing program on caribou and via an effects pathway, to the users of the Porcupine Caribou herd in Canada.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
194.	Withheld	Withheld	Government of the Northwest Territories	92862	18	Terrestrial Mammals	The amount of surface disturbance in the Coastal Plain of the Arctic National Wildlife Refuge (Coastal Plain) could impact the amount of habitat directly available to wildlife, and also contribute to an indirect loss of habitat in the adjacent zone of influence (ZOI).	Direct loss of habitat and potential calving displacement are discussed in the Draft EIS
195.	Withheld	Withheld	Government of the Northwest Territories	92862	25	Terrestrial Mammals	Gravel extraction is estimated at over 1.2M cubic yards of gravel under all scenarios (3-50). The GNWT believes this is not a minor surface disturbance and it will have an adverse impact on wildlife. Gravel extraction should count towards the project footprint if the gravel is quarried from within the Arctic National Wildlife Refuge.	Section 1.9.1 has been revised to identify the production and support facilities that would count toward the 2,000-acre limit, which now includes gravel mines.
196.	Withheld	Withheld	Government of the Northwest Territories	92862	36	Terrestrial Mammals	Comment(s) For Alternative B and C there is a note that "All lands in the Arctic Refuge Coastal Plain are recognized as habitat of the PCH and CAH and would be managed to ensure unhindered movement of caribou through the area." The objective for this lease stipulation is to "Minimize disturbance and hindrance of caribou or alteration of caribou movements." These two statements are contradictory. In order to understand the ability to manage for unhindered movement and meet the objective there is a need for a monitoring program that allows for comparison of movements pre and post development and would evaluate and adapt mitigations as needed. Minimum requirements for such a program should be outlined in the EIS.	Effectiveness will be monitored to the extent practicable (or as required by the ROD) and can be adjusted if necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
197.	Withheld	Withheld	Government of the Northwest Territories	92862	37	Terrestrial Mammals	The GNWT recommends the BLM modify the objective to be consistent with the note. (i.e. "minimize" not "ensure unhindered movements"). The GNWT recommends the lessee undertake coordinated monitoring activities pre- or post-development to implement an adaptive management program that would revise area-wide mitigations going forward.	Effectiveness will be monitored to the extent practicable (or as required by the ROD) and can be adjusted if necessary.
198.	Withheld	Withheld	Government of the Northwest Territories	92862	49	Terrestrial Mammals	ROP 23 requires that "Pipelines and roads would be designed to allow the free movement of caribou and the safe, unimpeded passage of those participating in subsistence activities.... f) Before the construction of permanent facilities is authorized (limited as they may be by restricted surface occupancy areas established in other lease stipulations), the lessee would design and implement and report a study of caribou movement, unless an acceptable study specific to the PCH and CAH has been completed within the last 10 years and approved by the BLM Authorized Officer." A quantitative analysis like what is required under ROP condition could have been included in the draft EIS using collar data from both the Porcupine caribou herd (PCH) and the Central Arctic herd (CAH). There is a very large amount of collar data that would require accurate temporal infrastructure shapefiles for the CAH at minimum to look at impacts of disturbance. It would be important to ensure all data collected for this study is available for the work i.e., individual companies would be required to provide the data to a main database. Recommendation The amount of time that has passed since the last PCH and CAH study should not be the only factor considered when determining if the lessee must design and implement and report a study of caribou movement. The GNWT recommends changes in baseline conditions and recent development in the program area also be considered, as	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
198. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	these factors may lead to different results from previous studies. Condition f of ROP 23 should be modified to include the underlined text in italics: "...unless an acceptable study specific to the PCH and CAH has been completed within the last 10 years and approved by the BLM Authorized Officer and there has been no change in baseline conditions since the previous study was conducted." The GNWT recommends the BLM consider conducting a quantitative analysis and include it as part of the supplemental EIS. This analysis could look at movement of the CAH near pipelines and roads to determine effectiveness of standard (a) to (c) of the ROP. The GNWT recommends the BLM ensure all data is provided to a main database to evaluate impacts on a regional basis.	(see above)
199.	Withheld	Withheld	Government of the Northwest Territories	92862	51	Terrestrial Mammals	Blasting can have potential impacts on wildlife, as noted on page 3-113 of the draft EIS. Recommendation The GNWT recommends appropriate mitigation measures be taken to avoid an adverse impact on wildlife if blasting is required at a quarry/borrow source/gravel mine site. A standard operating procedure for blasting should be required from the lessee and such plan should prevent blasting if caribou are within 2.5 miles and grizzly and polar bears are within a set distance. These distances should be clearly defined and vary temporally depending the sensitivity to disturbance. The Standard Operating Procedure should also detail how the approach of caribou into the buffer zone would be detected.	A ROP has been added that addresses blasting related to gravel mines/quarry sites.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
200.	Withheld	Withheld	Government of the Northwest Territories	92862	61	Terrestrial Mammals	Porcupine caribou are a highly valued traditional, cultural and subsistence resource for Northwest Territories' (NWT) communities in the Gwich'in Settlement Area and Inuvialuit Settlement Region of the NWT. The draft EIS does not acknowledge the extent that the proposed oil and gas activities in the Coastal Plain can have on Canadian harvesters of the PCH. For example, the statement in the draft EIS "Caribou are the most abundant large mammals in the program area and are an important subsistence resource for Iñupiaq and Gwich'in hunters. They also are important for harvest by other hunters who do not live in the refuge and for non-consumptive uses, such as tourism and wildlife viewing" undermines the importance of the herd to Indigenous People in Canada.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices.
201.	Withheld	Withheld	Government of the Northwest Territories	92862	64	Terrestrial Mammals	The GNWT recommends the BLM review and include information about the importance of the herd to Canada in their analysis of the impact of potential future oil and gas activity in the Coastal Plain, in order to fulfill obligations to the Agreement between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
202.	Withheld	Withheld	Government of the Northwest Territories	92862	65	Terrestrial Mammals	The statements in the draft EIS about climate impacts on caribou are from various herds around the world. Analysis by Russell and Gunn (2019) indicates the mechanisms that drive body condition and herd growth are different for different herds. This needs to be considered in the impact analysis. Recommendation The GNWT recommends the BLM incorporate information presented from Russell and Gunn (2019) in their analysis of impacts of potential future oil and gas activity in the Coastal Plain on the Porcupine caribou herd (PCH). These results should be considered when developing program mitigation and monitoring.	Discussion of Russell and Gunn (2019) was added to the text.
203.	Withheld	Withheld	Government of the Northwest Territories	92862	66	Terrestrial Mammals	When describing the PCH's use of the program area the draft EIS stated "During the post-calving season (last week of June and first week of July), most locations of PCH caribou were in the program area, and PCH caribou moved west toward the program area, even if they calved outside of it (Griffith et al. 2002)." 4There is more data available since this 2002 publication that looks at recent PCH movements. Russell and Gunn 2019 look at that data. Recommendation The GNWT recommends the BLM re-evaluate potential impacts to caribou from any potential future oil and gas activity using quantitative analysis, including recent data such as Russell and Gunn (2019). These results should be considered in development of lease stipulations related to the Porcupine caribou herd (PCH).	Discussion of Russell and Gunn (2019) was added to the text. Additional maps of PCH movements was added.

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204.	Withheld	Withheld	Government of the Northwest Territories	92862	67	Terrestrial Mammals	When describing the CAH's use of the program area the draft EIS stated "Females in the CAH calve in two areas west of the Arctic Refuge: one south and southwest of the Kuparuk oilfield, between the Colville and Kuparuk Rivers, and the other between the Sagavanirktok and Canning Rivers in an area with little development." It is unclear in the draft EIS if the two areas of calving were separated prior to the development of the Kuparuk oil field. Cameron et al. (2005) 5 reported decreased parturition rates in west side where development is compared to east side with no development (64.3 + 5. versus 82.5 + 5.3). This does not seem to be mentioned in the draft EIS even though the report was cited to support other statements made in the draft EIS. Recommendation The GNWT recommends the BLM re-evaluate the data available on the CAH to provide evidence of effectiveness of mitigations suggested in the draft EIS. This should include a quantitative analysis of all the CAH caribou collar data in respect to infrastructure and disturbance on the landscape.	More recent parturition data from the CAH indicates that the differences in parturition rates between the west and east side for the CAH are smaller (Lenart 2015, Lenart in prep). Additional information on CAH data was included.

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
205.	Withheld	Withheld	Government of the Northwest Territories	92862	68	Terrestrial Mammals	The BLM acknowledged that "Because climate change could involve both adverse and beneficial effects on caribou, it is not possible to predict the impacts on the PCH and CAH; however, climate change could affect caribou demographics as well as habitat use and introduce additional uncertainty into projections of impacts due to development." This statement indicates increased uncertainties over the cumulative impacts of development in the light of climate change. This warrants increased precaution and monitoring. Statements on page 3-110 of the draft EIS discuss the possible changes in caribou calving. These statements agree with predictions from Russell and Gunn (2019) of increased dependence on the Coastal Plain with warmer springs and subsequently more years when the PCH can reach their preferred habitat in the Coastal Plain. Recommendation The GNWT recommends the BLM conduct a cumulative effects assessment of the risks to the Porcupine and Central Arctic caribou herds that includes climate change scenarios. This work should consider the analysis in Russel and Gunn (2019).	Discussion of Russell and Gunn (2019) was added

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
206.	Withheld	Withheld	Government of the Northwest Territories	92862	69	Terrestrial Mammals	Table 3-19 summarizes the type, context and duration of potential effects of oil and gas exploration, construction, and drilling and operations on terrestrial mammals. The duration of the effect is classified as short or long term. There is no definition of short or long term, making it difficult to assess the severity of the effect. For example, the listed potential effects from ice roads and pads are listed as short term but it is unclear if short term is refers to one winter (the length of time a particular road would exist) or a period of years in which it is expected ice roads would be used for a particular lease/exploration/oil and gas activity. Recommendation The GNWT recommends short and long term be defined, with respect to the potential effects listed on Table 3-19.	Short and long-term was defined

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
207.	Withheld	Withheld	Government of the Northwest Territories	92862	70	Terrestrial Mammals	Experience in existing northern Alaska oil fields indicates that caribou and other terrestrial mammals may habituate to low-level constant noise and oilfield activities on roads and pads (maternal caribou with young calves, being a notable exception). PCH caribou have had much less exposure to human development and activities than have CAH caribou, however, so they would be expected to have stronger reactions to infrastructure than CAH caribou for some years. Some indication of habituation to infrastructure by PCH caribou during winter has been reported (Johnson and Russell 2014).” There are no citations for any of the statements in the paragraph above except Johnson and Russell and the findings of the paper are not adequately reflected in the statement. The work by Johnson and Russell looked at 27 years of collar data in the winter range of the CAH and estimated a ZOI around the main road of 30 km in early years (1985-1998) and later 18.5 km (1999-2012). These large ZOIs are not mentioned anywhere in the draft EIS and are not considered in the discussion on potential impacts of the development. Recommendation The GNWT recommends that the draft EIS be updated with an adequate treatment of the potential impacts to caribou, including zones of influence and cumulative effects. The GNWT recommends the EIS include an outline of what would be required for inclusion in a long-term monitoring plan that will provide evidence for effective mitigation of impacts on caribou.	Edited text to add citations and context regarding Johnson and Russell (2014).

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
208.	Withheld	Withheld	Government of the Northwest Territories	92862	71	Terrestrial Mammals	A displacement estimate of 2.49 miles of cows and calves from infrastructure is used throughout the draft EIS. This may be an underestimation of the impacts on the PCH. The ZOI on the Dempster Highway in Canada initially was as large as 30 km at a time when it is generally accepted that caribou are more tolerant to disturbance than cows and calves are during calving. Russell and Gunn (2019) discuss the differences between the CAH and the PCH including the difference in the width of the Coastal Plain. Recommendation The GNWT recommends the BLM reconsider the use of 2.49 miles as the ZOI during calving based on information presented in Russell and Gunn (2019).	Discussion of different ZOI was added.
209.	Withheld	Withheld	Government of the Northwest Territories	92862	73	Terrestrial Mammals	The draft EIS has two paragraphs to describe the cumulative impacts to terrestrial mammals. Recommendation The GNWT recommends the BLM conduct a cumulative impacts assessment that includes all threats to the PCH, including activities across the entire range. This assessment could lead to the identification of effects not currently identified in the draft EIS or provide additional details on cumulative effects that are currently inadequately assessed. Appropriate mitigation and monitoring should also be identified.	Discussion of Russell and Gunn (2019) was added.
210.	Withheld	Withheld	Government of the Northwest Territories	92862	83	Terrestrial Mammals	The projected peak in production is 20 years after first lease sale. Based on the timelines outlined in Appendix B, the herd has likely declined from historic highs naturally, even without the impacts of development. If activities proceed it will be crucial to plan monitoring for long term and ensure adaptive management occurs. Recommendation The GNWT recommends BLM ensure the monitoring plan put in place is long term and designed so impacts on the PCH can be determined over the entire cycle of the herd.	Effectiveness will be monitored to the extent practicable (or as required by the ROD) and can be adjusted if necessary. Baseline data would be necessary to monitor for change following project implementation.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
211.	Withheld	Withheld	Government of the Northwest Territories	92862	84	Terrestrial Mammals	The draft EIS does not include evidence to understand the how the changing of the layout of oil development facility (conceptual design figure B-2) would be effective in mitigating impacts to caribou. Recommendation The GNWT recommends the BLM provide evidence to understand conceptual design rationale.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
212.	Withheld	Withheld	Government of the Northwest Territories	92862	88	Terrestrial Mammals	E.2.2.1 Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Uses and Needs "This could result in reduced calf survival, as areas east of the program area are characterized by suboptimal forage and, as a result, higher calf mortality and lower pregnancy rates (Russell et al. 1996). These areas also have higher predation rates, which contributes to higher calf mortality (Young et al. 2002)." E-8 indicates potential impacts to abundance yet Table E-2 does not reflect this. Based on analysis by Russell and Gunn this may need to be reevaluated. The GNWT recommends the BLM reevaluate table E-2 and subsequent determinations.	Text in Appendix E, was updated in accordance with changes in Chapter 3 as appropriate.
213.	Withheld	Withheld	Government of the Northwest Territories	92862	90	Terrestrial Mammals	Appendix E ANILCA underestimates the potential impacts of development on the PCH. Evidence from the CAH shows displacement of cows from the calving grounds; declines in pregnancy rates. This analysis needs to consider differences between the CAH and the PCH response to climate factors and habitat available for calving. Recommendation The GNWT recommends the BLM repeat the analysis in Appendix E using a more quantitative method.	Text in Appendix E, was updated in accordance with changes in Chapter 3 as appropriate.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
214.	Withheld	Withheld	Government of the Northwest Territories	92862	94	Terrestrial Mammals	The indicators used for polar bears should also be applied to grizzly bears. There are additional indicators for displacement of caribou that could be included e.g. changes in movement rates and ZOI around infrastructure including pipelines. Recommendation GNWT recommends the BLM include additional indicators.	Discussion of movement rates around roads and pipelines was added.
215.	Charlotte	Fremaux	—	93091	4	Terrestrial Mammals	3. -FAILS- To properly assess the effect drilling and pollution would have on caribou populations, especially during calving and raising of young. Disturbance would cause population decline, which would have serious ramifications for large areas of Alaska and Canada, and would negatively impact indigenous people and their way of life.	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
216.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	3	Terrestrial Mammals	The DEIS considers 'primary calving areas' to be calving areas used at least 40% of years⁵. Using a high cut-off excludes areas that may be used less frequently for calving, but are nonetheless critical areas for years they are used. The BLM provides no justification for why the cut-off was chosen to be 40% of years, rather than 20% of years or 10% of years. The BLM is inconsistent in defining where these areas actually are. Without providing explanation, Maps 2-4 and 2-6 show 'Porcupine caribou calving habitat' as areas with different boundaries. The BLM provides no reasoning on why it chose to emphasize 'primary calving areas,' rather than any area with evidence of calving. The BLM's use of 'primary calving areas' ignores the importance of the Coastal Plain as post-calving habitat. Even in years when caribou calve to the east, caribou still congregate within the 1002 post calving to forage on nutritious plant growth and find insect relief. The entirety of the Coastal Plain is critical caribou habitat, not just areas the DEIS defines as 'primary calving areas.' In Appendix B the DEIS makes use of the vague term 'caribou area,' noting "in caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration.⁶" The DEIS does not define what a 'caribou area' is. The reader must assume that if the DEIS considers some areas to be 'caribou areas' then other areas must be not caribou areas (otherwise the DEIS would have specified this mitigation measure as applying to the entirety of the project area). This is consistent with the DEIS's failure to recognize that virtually all of the Coastal Plain is critical habitat for the Porcupine caribou herd.	Stronger mitigation was applied to areas with more frequent use during calving, but the Draft EIS acknowledges that other areas are used in some years and there may be larger impacts in these areas.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
217.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	6	Terrestrial Mammals	The BLM must undertake a quantitative analysis of the impacts of oil and gas development on the Porcupine caribou herd, using revised zones of influence as part of its models. 4. The DEIS does not model the impacts of oil and gas activities on the Porcupine caribou herd. The BLM fails to model for the population level impacts on the Porcupine caribou herd from oil and gas drilling on the Coastal Plain. The BLM refers to modelling by Griffith et al. that projected that calf survival could decline by 8% as result of oil and gas development within the calving grounds of the Porcupine caribou herd. ¹⁸ However, the BLM appears to discount these findings because the study did not use the 2,000 acre surface development limit.	The EIS will cite the relevant literature on potential impacts (e.g., Griffith et al. 2002, Russell and Gunn 2019).
218.	Malkolm	Boothroyd	CPAWS Yukon Chapter	94061	6	Terrestrial Mammals	The DEIS concludes that "while the PCH caribou population size would continue to fluctuate, potential impacts to herd size as a result of displacement of maternal caribou would be negligible. ²⁰ " The BLM fails to support this finding with any evidence, apart from a claim that calving caribou would be displaced from less than 4 percent of primary calving areas. The BLM does not consider displacement outside the 'primary calving area' or disruption to post-calving movements when coming to this conclusion.	Appendix E has been updated for the Final EIS.
219.	Amy	Law	Government of Yukon	94076	17	Terrestrial Mammals	It is further deficient by not providing a quantitative analysis of the impact to Porcupine Caribou of the project alternatives, and since no such complementary analysis exists for Canadian subsistence users, Yukon is unable to evaluate the context or intensity (i.e. significance in the National Environmental Policy Act) of potential direct or indirect impacts.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.

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220.	Amy	Law	Government of Yukon	94076	29	Terrestrial Mammals	The draft EIS notes that “in the absence of quantitative data, best professional judgment prevailed” (Appendix F, page F-1). The Government of Yukon finds this lack of quantitative analysis deficient, and has provided significant new information in our comments for the Porcupine caribou herd (Section 3 and Appendix 2) as well as identified deficiencies in the draft EIS for polar bears (Section 4) that should be considered in a supplemental EIS. This level of analysis requested should be extended to other species noted in the draft EIS Table 3-19.	Additional information was incorporated into the EIS, as appropriate.
221.	Amy	Law	Government of Yukon	94076	32	Terrestrial Mammals	· The draft EIS does not evaluate the transboundary effects of the proposed action Alternatives; · Our analysis of significant new information (Russell and Gunn 2019) and the presented action Alternatives indicates there is a high risk to the sustainability of the Porcupine caribou herd, impacting subsistence users in Canada; · The quantitative analysis conducted by Russell and Gunn (2019) compares the impacts of all action alternatives to the No Action Alternative (Alternative A). An analysis of this nature was feasible and necessary to make informed decisions; · The draft EIS does not indicate how many of the proposed mitigations for caribou have been proven effective, that lease holders would have any requirement to demonstrate their effectiveness, or that there would be any coordinated monitoring activities pre- or post-development to implement an adaptive management program that would revise mitigations going forward. This is a significant deficiency, given our low risk tolerance for impacts to the herd; - and · Confidence in the Alternatives is further eroded given that lease stipulations and required operating procedures may be waived at the discretion of a Bureau of Land Management Authorized Officer (draft EIS Volume 1, Page 2-3).	The EIS has been revised to more fully analyze transboundary impacts, where applicable. Exceptions, waivers, and modifications provide an effective means of applying “Adaptive Management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details. Exceptions, waivers, and modifications provide an effective means of applying “Adaptive Management” techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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222.	Amy	Law	Government of Yukon	94076	35	Terrestrial Mammals	Based on the vulnerability analyses in the above referenced report, the action alternatives presented in the draft EIS present a high risk of adversely impacting the PCH. The Government of Yukon requests that a supplemental EIS with new alternatives be completed before the EIS is finalized to ensure the PCH and its habitat have adequate protection.	The model in Russell and Gunn (2019) was discussed. Alternative D2 was modified to provide less area available to leasing.
223.	Amy	Law	Government of Yukon	94076	36	Terrestrial Mammals	The draft EIS does not present quantitative analyses assessing the PCH population level impacts. The supplemental analysis completed by Russell and Gunn (2019) was commissioned by the Government of Yukon and its partners and includes a PCH vulnerability risk assessment of all action alternatives for both high and low starting population sizes under various climate scenarios, to understand the consequences of the leasing program through time. In all model runs the herd is projected to decline faster and grow slower. This suggests that it is still possible to achieve population growth while demographic impacts from a proposed oil and gas activity are occurring (see draft EIS, Section 3, page 114; Arthur and Del Vecchio 2009).	Russell and Gunn (2019) was discussed. They assume a decline of 12% in foraging rate while in the project area with some variability by season and lease stipulation. This level of change in foraging rate has not been demonstrated in the literature.
224.	Amy	Law	Government of Yukon	94076	40	Terrestrial Mammals	The herd's use of the Coastal Plain is variable. There is little evidence in the draft EIS that considers caribou movement and potential impacts from oil and gas activity and infrastructure. Mitigations for the latter half of this period rely primarily on required operating procedure 23 and Lease Stipulation 6 in the case of Alternative D2.	Additional maps of caribou movement were added

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225.	Amy	Law	Government of Yukon	94076	42	Terrestrial Mammals	Caribou movements during the oestrid harassment period are identified as unpredictable in the draft EIS (see Section 3, page 112) and a similar comment could be made during the earlier mosquito harassment period in late June and early July. During mosquito harassment, caribou make movements of up to 20 km per day with no specific directionality (Russell and Gunn 2019). The absence of this movement data and analysis, and the misleading way in which the oestrid harassment period is singled out could mean sufficient mitigation is not proposed during this key period of the caribou life cycle.	Caribou movements during the mosquito season tend to be into the wind and along the coast or ridgetops. Additional maps of caribou movements were added.
226.	Amy	Law	Government of Yukon	94076	43	Terrestrial Mammals	Climate change effects and potential impacts on PCH populations including potential trajectories are not adequately addressed, or in some cases not even attempted despite acknowledging the effects of climate change "could influence the rate or degree of the potential cumulative impacts" (draft EIS, Section 3, page 122).	additional information on climate impacts on Rangifer populations was added.
227.	Amy	Law	Government of Yukon	94076	44	Terrestrial Mammals	Arctic warming has been measured at twice the rate of global averages resulting in long-term declines in snow cover, and an expansion and greening of tundra vegetation (Osborne, et al. 2018). This has direct consequences for wildlife populations, and in particular the PCH that relies on specific conditions for calving, post-calving, and insect relief. Griffith et al., (2002) predicts that an earlier spring will result in an increasing use of 1002 lands. Russell and Gunn (2019) confirm this prediction.	The effect of climate change on caribou calving locations was discussed in the Draft EIS.

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228.	Amy	Law	Government of Yukon	94076	45	Terrestrial Mammals	The draft EIS concludes that due to the complexity of climate effects on PCH, including beneficial and detrimental effects, it is impossible to model the net outcome (see Section 3, page 109). Climate change presents unavoidable uncertainty that will make management outcomes challenging. The supplemental analysis conducted by Russell and Gunn (2019) includes analysis that incorporates climate change. Their models demonstrate that there are considerably different outcomes depending on the long-term climate patterns that predominate over a decadal scale. As correctly stated in the draft EIS (see Section 3, page 110) "[d]evelopment alternatives that limit development to a smaller portion of previously used PCH calving grounds would allow caribou greater flexibility to adapt to changing conditions." However, the development Alternatives exceed the minimum required leasing areas and do not provide caribou with greater flexibility to adapt. Further, there is no planning to address the future needs of PCH.	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
229.	Amy	Law	Government of Yukon	94076	47	Terrestrial Mammals	PCH seasonal range data, specifically the concentrated calving areas in the 1002 lands, is misrepresented in the draft EIS due to an inaccurate description of the data and by failing to describe annual variation.	A map of annual calving distribution was added.

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230.	Amy	Law	Government of Yukon	94076	49	Terrestrial Mammals	The draft EIS contains errors when describing caribou calving for the PCH. First, the data does not describe the concentrated calving area. The term "concentrated calving area" is generally used to describe kernel ranges that are estimated using the densest 50 percent of calving locations (Griffith et al. 2002). However, the data shared by Suitor et al. to the BLM and its consultants in July 2018 describe the frequency that 95 percent seasonal kernels of parturient cow caribou overlap during the calving period, defined as May 26-June 10. This will be included in the draft update of the Sensitive Habitats to the Porcupine Caribou Herd by the Porcupine Caribou Technical Committee that is currently underway. Regardless of this error, we support the use of this data as caribou are sensitive throughout the period, and not just at the moment that calves are born (Russell et al. 1993).	The description of these maps was corrected.

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231.	Amy	Law	Government of Yukon	94076	50	Terrestrial Mammals	As a result of applying the general definition of a concentrated calving area, a second error appears in the interpretation and use of the shared data. Lease Stipulation 7 uses a polygon to describe the herd's primary calving habitat area, and relies on calving as a static spatial event. In the absence of other considerations, calving may be completely exposed to full development pressures as substantial inter-annual variation can occur (see Figure 3) as result of varying weather patterns driven by climatic cycles such as the Pacific and Arctic Decadal Oscillations (Griffith et al. 2002, Joly et al. 2011). Not only do weather conditions impact the distribution of the herd during spring migration and calving, but weather conditions can also have significant effects on demographic parameters for the herd. For example, Russell and Gunn (2019) and Griffith et al. (2002) describe calf survival as a function of calving location. In particular, Russell and Gunn (2019) show increasing calf survival when calves are born in 1002 lands as compared to habitats further east. Their report also describes the necessity of caribou to calve where conditions are optimal, defined as the snow depth in mid-May on the Coastal Plain.	The Draft EIS describes the impact of decadal climate patterns on calving distribution. Additional discussion from Russell and Gunn (2019) was added.

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232.	Amy	Law	Government of Yukon	94076	51	Terrestrial Mammals	Selecting areas that are most frequently used by caribou for calving for protective actions is important. However, the current description of calving area in the draft EIS fails to capture calving that occurs west and north of the identified "calving area" (although this is recognized in Section 3, page 107). Spatially we can see in Figure 3 caribou calve in high densities west of the defined "calving area" including just east of the Canning River. In subsequent years, if calving occurs in these areas and Alternatives B, C, or D1 are chosen, calving caribou would be afforded no specific protective measures, but rather standard terms and conditions.	The fact that caribou calve outside the area designated as primary calving area is acknowledged in the EIS.
233.	Amy	Law	Government of Yukon	94076	52	Terrestrial Mammals	There is a need to identify protective measures throughout the proposed development as calving is not spatially or temporally static and may occur anywhere in the proposed leasing areas. In fact, the draft EIS identifies that with anticipated climate change patterns in the area, an increased frequency of calving can be anticipated in the future in the proposed leasing area (see Section 3, page 110). Alternatives do not consider this important aspect of PCH calving, nor do they provide any supporting information. A simple 40 percent contour of years is used without supporting data or analyses. This fact is acknowledged briefly in the draft EIS (see Section 3, page 107) when referencing a US Fish and Wildlife Service report (2015); however, this comment is the only acknowledgement of this important factor and the Alternatives do not seem to reflect these important aspects of calving ecology.	Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.

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234.	Amy	Law	Government of Yukon	94076	53	Terrestrial Mammals	Lastly, the selection of the 40 percent of years contour to define the area that Lease Stipulation 7 applies to appears to be arbitrary (see draft EIS, Section 3, page 114). The basis of most caribou mitigations include Alternative D. No leasing and no surface occupancy are chosen based on the “primary calving habitat area”. In particular, the use of no leasing areas is solely based on this parameter. However, an area that on average is used every third year (i.e., the 33 percent of years contour) is almost as important as one used on average every 2.5 years (i.e., 40 percent of years contour). The draft EIS selection of the 40 percent of years vs the 33 percent of years contour is not explained. It is unclear if the selection of the 40 percent of years will achieve effective conservation of calving. A simple review of the total acreage of each of these contours shows that selection of approximately 30 percent of years would meet the Public Law 115-97 leasing minimum requirement of 800,000 acre (see draft EIS, Section 3, page 114). The selection of the contour area for 30 percentage of years will minimize the “unavoidable adverse effects from the proposed oil and gas activities” (see draft EIS, Section 3.5) and support all Parties in meeting PCH conservation obligations. Similar selection issues are noted for the post-calving period (Lease Stipulation 8).	Alternative D2 was modified to only open 800,000 acres to leasing.
235.	Amy	Law	Government of Yukon	94076	55	Terrestrial Mammals	The draft EIS states caribou “may habituate to low-level constant noise and oilfield activities on roads and pads” (see Section 3, page 114); however, there is no literature that clearly supports that caribou will habituate or that speaks to the demographic outcomes (i.e., factors that influence population growth or decline) of potential habituation. Habituation to infrastructure is very unlikely based on experiences elsewhere and specifically because of the period in which PCH use the project area.	The Draft EIS acknowledges that displacement is likely to occur during the calving period.

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236.	Amy	Law	Government of Yukon	94076	56	Terrestrial Mammals	Other references throughout the draft EIS used to support this position may not be appropriate. For example, the draft EIS identifies Johnson and Russell (2014) when describing potential habituation of the PCH to infrastructure (i.e., the Dempster Highway in Yukon). However, this is likely a misrepresentation of the paper, which states this as a single hypothesis without any explicit testing. The authors were attempting to understand differences in avoidance of 30 kilometers between 1985 and 1998, and a reduction in avoidance of 18.5 km between 1999 and 2001. The draft EIS fails to acknowledge that the authors also identify two other equally probable and more likely hypotheses including that habitat recovery from seismic exploration conducted in the 1960's may have been responsible, and/or a major change in harvesting practices along the Dempster Highway during this period may have led to changes in caribou behaviour between these periods.	additional context was added to discussion of this citation.
237.	Amy	Law	Government of Yukon	94076	57	Terrestrial Mammals	Although the draft EIS makes assertions regarding habituation of caribou to development, it also qualifies the statement as excluding cows and calves. Raising this potential outcome is misleading for the PCH as this herd will only be located in proposed leasing areas immediately prior to calving, calving, post-calving and early summer (all periods of sensitivity to infrastructure). In particular, the bulk of the herd will most frequently be present in the proposed leasing areas during post-calving (Russell and Gunn, 2019, Figure 11), which is precisely the period excluded (see draft EIS, Section 3, page 114). The habituation to infrastructure cannot be anticipated based on all evidence presented, including the draft EIS, and references should be removed or qualified with respect to PCH use of the 1002 lands.	Displacement of CAH is strongest during the calving and less strong post-calving (Lawhead et al. 2004, Haskell et al. 2006). Additional clarifications of potential differences between the CAH and PCH was added.

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238.	Amy	Law	Government of Yukon	94076	60	Terrestrial Mammals	In the draft EIS, the baseline data for the PCH provided is minimal and insufficient to allow reviewers to assess the proposed Alternatives. An understanding of the ecology of a species, including its use of a specific area, is required to design successful management interventions. Yet information describing the PCH's use of the area is summed up in Section 3.3.4 (see pages 3-103 to 3-107) as well as three maps (see Appendix A, Map 3-21). This summary is inadequate to describe the PCH baseline as no spatial information is presented about the herd's migration in and out of 1002 lands, the basic relationships between the herd and environment are not examined, and detailed habitat use information is not described.	Additional maps of PCH seasonal distribution was added.
239.	Amy	Law	Government of Yukon	94076	62	Terrestrial Mammals	There is no quantitative assessment of population-level impacts in the draft EIS, despite this being a critical element to allow for an assessment of impacts to subsistence users as required in the ANILCA Section 810 analysis. The draft EIS states that subsistence users may be impacted by changes in PCH distribution or abundance and by disturbance to subsistence activities. While minimal quantitative information is presented on distribution, no quantitative information is presented for population level impacts that could occur as a result of leasing activities as a result of Public Law 115-87.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
240.	Amy	Law	Government of Yukon	94076	63	Terrestrial Mammals	In addition to not providing a quantitative assessment of population impacts, there is no effort in the draft EIS to examine the impacts through the full population cycle of the PCH. The PCH population has varied from a low of 100,000 caribou in the 1970's to its current high of 218,000 caribou. As demonstrated by Russell and Gunn (2019), the effects of development will vary based on the herd's population size; therefore an assessment throughout the life cycle of the herd is required.	Discussion of Russell and Gunn (2019) was added.

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241.	Amy	Law	Government of Yukon	94076	64	Terrestrial Mammals	The draft EIS uses the neighbouring Central Arctic herd (CAH) to demonstrate the effectiveness of proposed mitigation measures; however, the authors draw inappropriate comparisons for two reasons: 1. The differences between the CAH and the PCH are well documented. Due to these differences, it is unreliable to create direct linkages for management prescriptions for the PCH. 2. The comparisons drawn between the CAH and PCH are done using inadequate data and analysis from the CAH.	Additional information on differences between the CAH and PCH and CAH analysis was added.
242.	Amy	Law	Government of Yukon	94076	65	Terrestrial Mammals	Differences between the herds are described by Russell and Gunn (2019) as follows: · Numerically, the herds are not comparable. The size of CAH has varied from 5,000 to 68,000 animals and is currently at 28,000 according to the draft EIS (Section 3.3.4, page 3-104). The PCH is nearly 10 times as large, currently at 218,000 with the lowest estimated size of 100,000 animals. · The CAH has a larger, more homogenous low-lying coastal plain area available to it for calving, which has seemingly allowed it to shift its core calving grounds away from, and in response to development without massive impacts to the herd. Some of the CAH cows calve in areas away from development. The 1002 coastal plain is narrow, squeezed between the coast and mountains, which limits alternative and equivalent calving areas to the 1002 lands. PCH calving density was 5 times higher than the CAH when the Griffith et al. (2002) report was completed. This increases the PCH's relative exposure to development. · The maximum growth rate of CAH has been more than double the PCH, according to the Griffith et al. (2002) report, (rates of up to 10-13 percent compared to 5 percent for PCH). This indicates that the CAH has a very different ability to recover from declines. · Harvest of CAH was actively managed in the oilfields, where road hunting was limited (Alaska	Additional information on differences between the CAH and PCH and CAH analysis was added. Hunting by oil field workers will not be allowed, this quote omits part of the stipulation requiring oil field workers to leave the oil field before hunting. ROP 38 prohibits hunting from persons on work status.

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242. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Department of Fish and Game 2003). The draft EIS indicates that subsistence harvest will be allowed on access (gravel roads) created by development in the 1002 area, as well as hunting by oilfield workers once they are off shift. We expect the zone of influence for the PCH will be significantly higher for roads in the 1002 area because of this hunting. · Spring and early summer forage conditions appear to be more critical to the PCH, while CAH early calf survival is correlated with fall conditions the previous year. Thus, the documented displacement of calving in the CAH, if experienced with development in the PCH, would have more significant impacts on calf survival (for the PCH) than occurred in the CAH. · The PCH undertakes substantially larger annual movements than the CAH and the size of aggregations of PCH moving during the insect harassment season have no parallel in the CAH.	(see above)
243.	Amy	Law	Government of Yukon	94076	66	Terrestrial Mammals	Given these significant differences, extreme caution is warranted in the use of mitigation that may not even be proven with the CAH let alone with the PCH (Russell and Gunn 2019). For example Cronin et al., (1994) stated that: "Such large differences in herd and range size [of Western Arctic Herd and PCH] make extrapolating results from the CAH questionable. Other aspects of the annual cycle and ecology of these populations differ in ways that could affect application of effective mitigation measures...During the post calving and insect periods, groups of up to 50,000 PCH caribou could encounter oil fields. One cannot predict the effect of oil field structures on such large groups."	Uncertainties involving large post-calving groups was added

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244.	Amy	Law	Government of Yukon	94076	67	Terrestrial Mammals	In this case, analysis of large groups of CAH caribou (>100 caribou) interacting with roads and pipelines is sufficiently rare to not permit quantitative analysis (Lawhead et al. 2006). With PCH, we can easily anticipate aggregations of tens of thousands of caribou interacting with proposed roads and pipelines as described by the draft EIS. Therefore, the parallels in the draft EIS between the PCH and the CAH are misleading. As described above, data from the CAH is not directly comparable, as it is referenced in the draft EIS. Nonetheless, it is important to evaluate potential effects using the best available data from the region. With clear acknowledgement of the differences between the herds, data from the CAH could have been used to better characterize potential effects and the effectiveness of mitigation measures; however, the authors did not present or analyze the best available information for the CAH. Currently, data from the CAH is summarized in Section 3.19 (page 3-114), but the analyses referred to date back to the 1980-1990's with the most recent reports dated to 2006. This is despite the advent and common deployment of high resolution satellite GPS collars among the herd over the past decade.	Additional information on the CAH was added.
245.	Amy	Law	Government of Yukon	94076	68	Terrestrial Mammals	A potential outcome from this lack of analysis is the application of a zone of influence of 2.49 miles. While this value is well established in Alaska's regulatory framework, it may not be applicable for the draft EIS. Significant data has been collected for the CAH that is not referenced or analyzed in the draft EIS to determine if this same zone of influence should be updated as a starting point in the draft EIS (Russell and Gunn 2019).	The 2.49 mile zone continues to be applicable to the CAH. Lawhead et al. 2004

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246.	Amy	Law	Government of Yukon	94076	69	Terrestrial Mammals	If CAH data is used as a starting point for PCH potential impact analysis, it is important to address the differences in how the herds aggregate. We know that the post-calving and insect relief periods overlap, with large aggregations of caribou seeking insect relief and forage during a period of peak lactation requirements. Manseau (1996) found that dense aggregations of caribou were at significant energy deficits and were required to move substantially to meet their needs. As experienced with the CAH, Manseau's (1996) findings are critical when considering the efficacy of specific mitigations. However, the CAH and the PCH differ greatly in their orders of magnitude. Cronin et al., (1994) state that caution is required when comparing the PCH and CAH owing to significant differences between them. In fact, Russell and Gunn (2019) demonstrate that it is likely that PCH aggregations or "super groups" exceed 100,000 in some instances whereas CAH aggregations are an order of magnitude smaller. With PCH in mind we can easily anticipate aggregations of tens of thousands of caribou interacting with roads and pipelines as described and anticipated by the draft EIS. A supplemental EIS should describe how these two herds differ in movement, use, density, and potential for interaction with infrastructure.	Uncertainties involving large post-calving groups was added.
247.	Amy	Gulick	—	94077	5	Terrestrial Mammals	5) The BLM acknowledges that oil and gas activities will likely disturb and displace caribou of the Porcupine Caribou Herd, but fails to adequately address these impacts and to consider the full range of areas that are important to caribou.	The distribution of caribou is discussed in the EIS and additional caribou maps were added.

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248.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	8	Terrestrial Mammals	13 We raised the many unknowns about Porcupine Caribou Herd and the things that influence their population and behavior. BLM should use great care and a cautionary approach when considering authorizing oil and gas activity that will impact our caribou. BLM cannot properly determine impacts without more studies on the risk of development to caribou on the Coastal Plain. BLM has not done any new studies for its EIS process. Instead, the agency relies on outdated information or makes assumptions based upon the behavior of other caribou herds in Alaska. We also requested that researchers performing the draft EIS studies should work with their communities to collect information in an unobtrusive manner and incorporate traditional knowledge. This has not been done. BLM's analysis entirely ignores Gwich'in knowledge and input, despite the fact that we have been the land managers of this area for millennia. The Gwich'in are the first scientists of this land.13 Gwich'in Steering Committee, Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (June 19, 2018).	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.

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249.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	9	Terrestrial Mammals	the DEIS's caribou studies do not use traditional knowledge, the best available science and improperly minimize impacts to caribou. For example, the DEIS does not place the Porcupine Caribou Herd in the context of the global condition of caribou populations, ignoring the risks posed by global declines of caribou. In addition, the DEIS omits important baseline studies, does not explain its assumptions when analyzing road, pipeline, air traffic, noise and human activity impacts on caribou, and the sources of data used to understand distribution of the herd are not transparent. Further, impacts are insufficiently considered, including development like seismic exploration and road effects, which would greatly alter the current condition of the Porcupine Caribou Herd's habitat.	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.
250.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	10	Terrestrial Mammals	BLM must account for the fact that the Porcupine Caribou Herd's range is currently without any major transportation networks and the herd have not had any previous exposure to oil and gas infrastructure in the calving and nursery grounds. The fact that impacts "are expected to be more intense" 14 for this herd is acknowledged, but not considered and actually analyzed throughout the impacts analysis, including complete omission in the subsistence discussion. There is little evidence that caribou actually habituate to infrastructure, as BLM assumes in the DEIS. Rather, infrastructure could displace caribou availability farther from the project area, and generally alter migratory paths.	The PCH does have some exposure to roads and development. The available data from the CAH suggest that caribou do not habituate to roads during calving, but displacement from roads is smaller during other seasons and many caribou use gravel road and pads for oestrus fly relief in mid-summer (Cameron et al. 2005, Pollard et al. 1996, Lawhead et al. 2004, Haskell et al. 2006).

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251.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	12	Terrestrial Mammals	The DEIS also recognizes that oil and gas activities moving the herd away from the Coastal Plain would be detrimental and cited a study predicting an eight percent decline in calf survival from displacement. ¹⁸ The DEIS also recognizes that impacts to calf survival and herd growth will reduce numbers of the Porcupine Caribou Herd, leading to reduced harvest success among the Inupiaq, Gwich'in, and Inuvialuit caribou hunters. ¹⁹ While the agency makes these findings, BLM fails to quantify, or further analyze these effects. Further, the DEIS acknowledges that the potential for disturbance and displacement of caribou could cover up to 633,000 acres (40 percent of the Coastal Plain). Despite this, BLM offers a wholly insufficient solution to mitigate the impact: suspension of "major construction activities" - but not drilling - for a single month of the year from May 20-June 20th. BLM fails to actually analyze the effectiveness of this proposed measure.	"suspension of "major construction activities" - but not drilling - for a single month" is just one stipulation in Alternative B, additional stipulations are considered in Alternatives C and D.
252.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	14	Terrestrial Mammals	The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, and their knowledge of the Coastal Plain as calving and post-calving habitat should be incorporated in caribou studies. Merely recognizing, but not addressing and incorporating available scientific insights from the people who have lived in and relied on the area for a millennia is unacceptable. The Draft EIS therefore ignores significant and permanent impacts to the Porcupine Caribou Herd.	Traditional knowledge has been shared with the BLM throughout development of the EIS, including during scoping, public meetings on the Draft EIS, government-to-government and ANCSA consultations, and through the Section 106 process. This information has been used to help inform development of the EIS and ensure a more robust analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
253.	Bernadette	Demientieff	Gwich'in Steering Committee	94080	35	Terrestrial Mammals	BLM also fails to explain how the fully waivable lease stipulations, ROPs, and mitigation measures will ensure that caribou will not be deterred from the Coastal Plain and still be available to Gwich'in hunters.	Operators are required to submit a written request for an Exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer needed or (2) the proposed operation would not cause unacceptable impacts. The criteria for approval of exceptions, waivers, and modifications should be supported by NEPA analysis, and may require site-specific environmental review. Requests should contain, at a minimum, a plan that includes related on-site or off-site mitigation efforts to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an Application for Permit to Drill, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process. During the review process, BLM coordination with other local, state, or federal agencies (e.g., ADFG, NSB, and local governments) should be undertaken, as appropriate, and documented. The BLM will also consult with the federal surface management agency (e.g., USFWS). Approval or disapproval is made by the Authorized Officer, and the decision is documented. If the waiver, exception, or modification is approved, any necessary mitigation is also documented. The applicant is then provided with a written

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
253. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	notification of the decision. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
254.	—	—	Alaska Department of Natural Resources	94102	3	Terrestrial Mammals	Regarding proposed TL stipulations, BLM has an agreement with DFG to facilitate data sharing for the current and historical biological data on the Porcupine Caribou Herd. We request that BLM coordinate with DFG to supplement the existing figures in the Draft EIS with a figure showing annual use for the past 10 years (2011-2018) or for as many years as recent data is available, and consider potential revisions to Alternative B, Lease Stipulation 7-Porcupine Caribou Primary Calving Habitat Area if the resulting mapping substantially alters earlier assumptions regarding use.	Current available data is incorporated into EIS. BLM will share data with other agencies/governments as appropriate. GIS data used in the Draft EIS is available online at the project website.
255.	—	—	Alaska Department of Natural Resources	94102	65	Terrestrial Mammals	41 Chapter 3.3.4, Terrestrial Mammals, Page 3-108 Correction In paragraph 4, change rotting waste to putrescible waste as this is the more appropriate term for waste that may attract carnivores.	That change was made.
256.	—	—	Alaska Department of Natural Resources	94102	66	Terrestrial Mammals	42 Chapter 3.3.4, Terrestrial Mammals, Page 3-115 Revise analysis The discussion of road and pipe impacts to caribou do not mention orientation of infrastructure features, which has been a consideration in other locations to mitigate impact to migration or movement.	Text has been revised.
257.	—	—	Alaska Department of Natural Resources	94102	75	Terrestrial Mammals	51 Glossary, Page 9 Clarification Insect relief area. For clarity change to: An area of the North Slope with relatively low numbers of insects because of wind, ice, or cooler temperatures that caribou use for relief from insects.	Text has been revised.
258.	—	—	Alaska Department of Natural Resources	94102	79	Terrestrial Mammals	55 Appendix A, Map 3-23 Clarification The top calving in-map legend for Alternative C likely should include "Calving period, just cows and calves."	Text has been revised.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
259.	Kennon	Meyer	—	94105	19	Terrestrial Mammals	Annual variability in calving area indicates that the Herd needs a large region from which the best conditions for calving can be selected in a given year, including from the Coastal Plain. ¹²¹ Therefore, it is important to protect areas adjacent to and even miles away from migration routes from surface disturbance. "Encroachment of humans on the vast ranges used by migratory animals is one of the primary reasons for their endangerment." ¹²² As the USFWS has explained, "caribou are reluctant to cross roads, berms, pipelines and other related obstacles." ¹²³ This has been well documented for decades. ¹²⁴ For the reasons discussed above, caribou need to move freely over vast areas to forage, avoid predators, escape from harassing insects, and reach favorable summer and winter ranges. But structures such as pipelines and roads "may deflect caribou movements, and reduce their chances for survival." ¹²⁵	These issues were discussed in the Draft EIS.
260.	Joshua	Miller	—	94427	6	Terrestrial Mammals	While the Arctic Refuge Coastal Plain is an important caribou calving area, early indications from skeletal records suggest that the Coastal Plain may have had broader significance to their population biology in the past. Increased evaluation is warranted into the climatic conditions during which caribou mating may have occurred on the Coastal Plain and whether projected future climate conditions may drive caribou to repeat those uses in the future.	Added Miller et al. 2013 to PCH use of the area.
261.	Withheld	Withheld	—	94593	8	Terrestrial Mammals	Little or no information about wolf populations and potential impacts	There is little available data on wolf populations in the area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
262.	Tim	Whitehouse	PEER	95601	19	Terrestrial Mammals	What are key information gaps? Much of the available information regarding effects of oil field development on caribou came from studies of the Central Arctic herd during the 1980s and 1990s. These studies did not utilize the sophisticated analytical methods that have been developed since then, and most were limited to documenting large-scale distribution patterns, comparing density of caribou at varying distances from infrastructure, and observing changes in caribou numbers over time. In addition, many studies were of limited duration and had low statistical power to detect differences in demographic rates (survival, reproduction, and population change). Because of the variety of natural factors that drive caribou demographics (e.g., variation in climate, weather, forage quality, predator abundance) and the general tendency of caribou herds to fluctuate in abundance, these studies provide only limited information to evaluate the potential impacts of development on the Porcupine caribou herd. Furthermore, there are significant geographic differences between the ranges of the Central Arctic and the Porcupine herds. For example, the coastal plain used for calving by the Central Arctic herd extends up to 100 mi (160 km) inland from the Arctic coast to the foothills of the Brooks Range; whereas, the coastal plain used by the Porcupine herd is only 10-40 mi (16-64 km) wide and contains a much smaller proportion of moist and wet sedge tundra habitat used by caribou for feeding during early summer. These differences suggest that impacts on the Porcupine herd could be greater due to the relative scarcity of alternative calving and post-calving habitat within the range of that herd. Key information gaps include: * Estimated rates of survival and recruitment are not sufficiently precise to detect biologically significant differences	Additional information on more recent CAH research, differences between CAH and PCH was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
262. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	among years; * Lack of understanding of what drives the variation in calving site selection by caribou; * Little empirical data are available concerning the potential physiological and demographic effects of displacement of caribou from preferred calving and insect relief habitats (e.g., evaluate the value of the 1002 Area in providing higher nutrition, reduced predation, and access to insect relief habitat in comparison to other areas). * Data are needed to assess effectiveness of existing measures used to mitigate effects of disturbance on caribou and to develop more cost-effective measures; * Research is needed to differentiate the effects of disturbance from natural variation in caribou distribution, abundance, and demographic parameters; * Limited understanding of how interchange of caribou between neighboring herds might affect population dynamics of those herds.	(see above)
263.	Tim	Whitehouse	PEER	95601	20	Terrestrial Mammals	What studies/surveys need to be conducted to fill those information gaps? Exploration phase: * Increase demographic/behavior monitoring: To improve precision of estimates of survival, birth rates, and recruitment so that changes in important demographic parameters can be detected, monitoring intensity should be increased (number of radiocollared caribou and monitoring effort). This monitoring should use GPS collar technology so that fine-scale behavior data can simultaneously be collected, increasing the ability to understand the influence of habitat conditions on demography. Such data would also reveal emigration rates to neighboring herds. Increased field monitoring would also facilitate the following proposed studies (potential cost: \$75,000-\$100,000 annually); * Assess factors associated with calving site selection: Identify and evaluate the relative importance of climate, predator	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
263. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	abundance, forage quality, insect harassment, population density, and anthropogenic disturbance on calving site selection using a combination of long-term and newly collected data; Estimated cost: \$75,000 annually for 5 years. Should be done during exploration period so that impacts of future development can be differentiated from natural drivers. * Investigate characteristics associated with post-calving distribution: Use longterm and newly collected data to understand the influence of weather, forage conditions, insect harassment and population density on caribou movement and resource-selection patterns during the post-calving period. Estimated cost: \$150,000 annually for 5 years. This information will be needed during the development phase to guide design and placement of infrastructure. * Analyze existing telemetry data to quantify seasonal ranges and migration routes: A large database of telemetry data exists that could provide valuable baseline information on caribou movements. These data need to be formally analyzed to update the report "Sensitive Habitats of the Porcupine Caribou Herd" (International Porcupine Caribou Board, 1993). Estimated cost: \$25,000 (seasonal salary; no costs other than staff time); this information is needed to identify sensitive areas that may require special management during development and production. * Monitor body condition and survival: Existing long-term monitoring programs should be continued to predict population trends and evaluate the roles of natural vs. anthropogenic factors. These data will be needed to evaluate causes of future changes in population size that are likely to occur during the development and production periods. Development and production phase: * Continue monitoring caribou movements: Monitoring data are	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
263. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	needed to identify calving areas and seasonal ranges and to quantify caribou recruitment and survival; Estimated cost: \$250,000 annually, collaboration with state, federal, and Canadian agencies, cost sharing to be determined. * Identify drivers of caribou fitness traits (body condition, survival and recruitment): Use long-term and newly collected data on collared individuals to quantify the effects of annual variation in summer and winter forage conditions (vegetation type, nutritional condition), weather (phenology, snow depth and density, icing events), predator abundance, population density, insect harassment and human activity on caribou body condition, survival and recruitment; Estimated cost: \$200,000 annually for 5 years. This information will be needed to differentiate potential effects of displacement from variation due to natural causes, to evaluate mitigation measures that are applied, and to develop improved mitigation strategies. * Monitor body condition and survival: Long-term monitoring of basic physiological and demographic traits is necessary to predict population trends and evaluate the roles of natural vs. anthropogenic factors. These data will be needed to evaluate causes of future changes in population size that are likely to occur during the development and production periods. * Project future changes in distribution and demography: With an improved understanding of the factors that influence the behavior and demography of Porcupine caribou (see previous needed studies), the influence of development within the 1002 Area on the herd can be projected, along with expected future changes in other key factors (i.e., climate, insect harassment, forage conditions). Estimated Cost: Analysis time after the other studies have been completed.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
264.	Tim	Whitehouse	PEER	95601	34	Terrestrial Mammals	Changes in moose distribution and abundance are likely to occur as a result of shrub expansion on the coastal plain, and potential effects of winter snow conditions should be monitored to understand changes in moose populations and availability of moose for subsistence hunters.	The effect of climate change on moose distribution was discussed.
265.	Tim	Whitehouse	PEER	95601	35	Terrestrial Mammals	Information is needed to assess the major factors limiting distribution and abundance of moose and muskox (e.g., forage quality and abundance, weather, predation, disease).	ADFG conducts moose and muskox research.
266.	Tim	Whitehouse	PEER	95601	36	Terrestrial Mammals	Abundance and density of muskoxen within the Arctic Refuge should be monitored to determine if muskoxen return to the Refuge from adjacent areas and if this is influenced by oil field infrastructure or changes in abundance and distribution of predators and other prey species.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
267.	Tim	Whitehouse	PEER	95601	37	Terrestrial Mammals	Distribution, abundance, and habitat associations of arctic ground squirrels should be documented. Ground squirrels are a key species in the Arctic, in that they are an important prey for many predators and can influence vegetation communities by consuming vegetation and by fertilizing the tundra around their colonies. Thus, changes in ground squirrel populations can have profound effects on local communities.	Ground squirrels are widespread in suitable habitat.
268.	Tim	Whitehouse	PEER	95601	38	Terrestrial Mammals	Population levels of microtines and other small rodents should be monitored to determine the timing and magnitude of population highs and lows and how these relate to other components in the ecosystem, especially population dynamics of mesocarnivores and their alternate prey (ground-nesting birds). Effects of climate change on the distribution and dynamics of small mammals should also be investigated.	Effects of climate change on small mammals is unlikely to change dramatically with different project alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
269.	Tim	Whitehouse	PEER	95601	39	Terrestrial Mammals	Small mammal species (rodents and shrews) on the coastal plain should be inventoried; particularly species for which little is known, such as the holarctic least shrew. Very little data are currently available concerning which small mammal species occur on the coastal plain, or their population status.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
270.	Tim	Whitehouse	PEER	95601	40	Terrestrial Mammals	The distribution and abundance of hares on the coastal plain should be documented, and species identity should be determined (snowshoe vs. Arctic hare). Hares are a key species of the boreal forest, and are likely to increase their range northward as the climate warms. This will have far-reaching effects on both vegetation and other mammals and birds.	The effect of climate change on snowshoe hare is discussed. Arctic hare are not known to occur in the Project Area.
271.	Tim	Whitehouse	PEER	95601	42	Terrestrial Mammals	We need a greater understanding of predator/prey and competitive relationships among red and arctic foxes, lemmings, and ground-nesting birds; how these are affected by lemming cycles; and how these complex relationships may be altered by a warming climate and anthropogenic disturbance	This is unlikely to change dramatically with different alternatives.
272.	Tim	Whitehouse	PEER	95601	43	Terrestrial Mammals	We lack current data regarding the abundance and distribution of grizzly bears; the relative importance of the 1002 area as denning habitat is unknown; improved methods are needed to reduce availability of anthropogenic foods and the resulting negative interactions with human activities.	Extensive research on bears in the Prudhoe Bay/Kuparuk area and waste management has been conducted.
273.	Tim	Whitehouse	PEER	95601	44	Terrestrial Mammals	Current data are needed regarding the distribution and abundance of wolves and wolverines; to document den site locations and habitat attributes; evaluate potential for disturbance or mortality related to interaction with human activities; and evaluate effects of increased access by subsistence hunters and trappers.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
274.	Tim	Whitehouse	PEER	95601	45	Terrestrial Mammals	More information is needed regarding how predation, weather, disease, and nutrition influence population dynamics of moose and muskoxen; the potential for reestablishment of muskoxen in the Refuge by expansion of neighboring populations; and the potential effects of human activities (positive: protection from predators; or negative: disturbance or displacement) on both species.	Research on muskox has been conducted by ADFG and USFWS.
275.	Tim	Whitehouse	PEER	95601	46	Terrestrial Mammals	Are lemming cycles changing? How does this affect survival and population dynamics of ground-nesting birds? Does this moderate or increase effects of human activities?	This is unlikely to change dramatically with different alternatives.
276.	Tim	Whitehouse	PEER	95601	47	Terrestrial Mammals	We have only limited knowledge of which mammal species are present on the coastal plain; information is particularly needed for little-known species and those whose ranges are restricted to arctic tundra.	There are no terrestrial mammal species on the 2019 BLM sensitive species list occurring in the project area. Small mammal surveys could be conducted at the project design level analyses.
277.	Tim	Whitehouse	PEER	95601	48	Terrestrial Mammals	What studies/surveys need to be conducted to fill those information gaps? Exploration phase: * Develop methods to estimate abundance of fox and lemming populations; monitor changes over time; and assess impacts on nesting birds. Estimated cost: \$70,000 annually for 3 years to develop and verify techniques. This information will be needed to distinguish between natural influences and potential effects of future development, and to assist with the design and siting of future infrastructure. * Estimate abundance of grizzly bears in the 1002 Area during June. Estimated cost: \$100,000 during one year, or \$50,000 per year for 2 years. This baseline information will be needed to assess potential effects of future development. * Continue annual surveys for moose and muskoxen that systematically cover the 1002 area. Parameters should include abundance, distribution, sex and age structure, reproduction and survival. Estimated cost: \$10,000-\$20,000 per year. These ongoing surveys are needed to assess	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
277. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	responses of these species to human activities and habitat changes. * Investigate factors limiting distribution and abundance of muskoxen on the eastern North Slope. Collaboration with Alaska Dept. of Fish and Game and Yukon Dept. of Environment. Potential cost: \$100,000 annually for 5 years; cost sharing to be determined. Expansion of muskoxen back into the Arctic Refuge would greatly enhance the chances of survival for this small and fragmented population. These data are needed to evaluate potential effects (both positive and negative) of development and operation of oil field infrastructure. * Investigate the relationship between climate change, vegetation, and moose population dynamics. Could be built into ongoing monitoring work; primary cost would be additional staff time for data analysis plus ~\$10,000 per year for browse surveys. These data are needed to differentiate between natural and anthropogenic effects on moose populations. Study should begin prior to development to provide baseline information on this population. * Revisit wolf dens documented during the 1980s to see if any are still being used and identify any new den sites. Wolf observations during seasonal surveys for ungulates would provide some indication of wolf packs that occupy the 1002 area. Estimated cost: \$10,000. Wolf dens are thought to be rare within the 1002 Area; however, any that are found should be flagged for special management consideration. * Record observations of wolverines and their tracks during late winter surveys for ungulates to obtain information on relative abundance and distribution. Potential denning habitats of wolverines with kits should be mapped using satellite imagery or other methods. (No cost other than staff time, assuming ungulate surveys are funded). Surveys should begin prior to development to	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
277. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	provide baseline information. * Conduct an inventory of small mammal occurrence on the coastal plain. Estimated cost: \$30,000 annually for one to 4 years. There is a critical need for baseline information prior to development of the coastal plain. This information will be needed to guide the design and siting of future infrastructure. * Map the distribution of potential ground-squirrel habitat. This may be possible from satellite imagery based on local vegetation or in combination with broadscale vegetation or soils mapping efforts. (No cost other than staff time). This information will be needed to guide the design and siting of future infrastructure. Development and production phase: * Conduct long-term monitoring of relative abundance of foxes and lemmings, and their effects on nesting birds; Estimated cost: \$20,000 annually, in collaboration with shorebird and waterfowl monitoring. These data are needed to distinguish between natural and anthropogenic effects. * Monitor occurrence and behavior of grizzly bears in relation to human activities; identify locations of dens; estimate population size at 5-year intervals. Estimated cost: \$30,000 per year plus \$100,000 every 5 years. This information is needed to monitor effectiveness of established mitigation measures and to ensure human safety. * Continue annual surveys for moose and muskoxen that systematically cover the 1002 area in late winter. Estimated cost: \$10,000 per year. These ongoing surveys are needed to assess responses of these species to human activities and habitat changes. * Continue investigation of the relationship between climate change, vegetation, and moose population dynamics. Could be built into ongoing monitoring work; primary cost would be additional staff time for data	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
277. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	analysis plus ~\$10,000 per year for browse surveys. These data are needed to differentiate between natural and anthropogenic effects on moose populations. * Develop protocols for long-term monitoring of habitat characteristics important to large herbivores, including vegetation type, nutrient quality, snow characteristics (depth, density, extent, phenology, icing events). Initial costs would be limited to additional staff time; future costs to be determined. This information will be needed to assess long-term impacts of development and to distinguish those from effects of natural processes. * Record observations of wolves and wolverines and their tracks during seasonal surveys for ungulates to obtain information on relative abundance and distribution. An inventory of known dens should be established. (No cost other than staff time, assuming ungulate surveys are funded). This information will be used to guide design and siting of future infrastructure. * Monitor observations of hares and their tracks to detect potential range expansion; determine species identity of hares that are observed. (No cost except staff time to compile and verify observations).	(see above)
278.	Tim	Whitehouse	PEER	95601	64	Terrestrial Mammals	What studies/surveys need to be conducted to fill those information gaps? Please include duration (start and end), lead, and cost estimates. * Population Dynamics o Estimation of abundance and population dynamics (i.e. demographic rates such as survival and reproduction). Surveys using mark-recapture methods are a more viable option than other non-invasive techniques (e.g., aerial survey).	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
279.	Edward	Rexford	Native Village of Kaktovik	95607	6	Terrestrial Mammals	While we understand that the maps focus on the Program Area, it is misleading that they end at the United States and Canadian Border. Data from the CCP , the Alaska Department of Fish and Game , and elsewhere shows that the Porcupine Caribou Herd is just as reliant on the Ivvavik and Vuntut National Parks east of the Program Area for calving. Only showing the Program Area is misleading and skews perception that the PCH only use the 1002 area for calving, which is false.	Maps were modified to show a wider extent
280.	Edward	Rexford	Native Village of Kaktovik	95607	7	Terrestrial Mammals	There is not much information on the size and current health of the PCH included in the DEIS. In July 2017, a survey estimated the PCH to be at 218,000 caribou - a record high of the herd. It should be included in the EIS that the PCH could be reaching their peak given what their habitat can support. According to the Alaska Department of Fish & Game, "caribou populations are known for dramatic population changes. Once a herd becomes too large for its habitat, the caribou become nutritionally stressed and the herd will decline. These fluctuations are a normal part of caribou herd biology. " NVK is concerned that any future decline of the PCH would be attributed to potential future oil and gas activity in the Coastal Plain, while the truth may be that the decline is simply a part of the natural cycle of caribou herds.	Text that caribou populations are cyclical was added. There is limited information available on what the maximum size or carrying capacity of the PCH range is.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
281.	Edward	Rexford	Native Village of Kaktovik	95607	14	Terrestrial Mammals	Pg. 3-173 The DEIS states "According to the Gwich'in people's knowledge, any development in the program area would have devastating effects on the population of the PCH and other resources, such as migratory birds, that have key habitat in the coastal plain." The DEIS should then include a section summarizing the health of the Central Arctic Herd and the which migrate within the bounds of the Prudhoe Bay and Kuparuk Oilfields and calve in the Prudhoe Bay area. The BLM would also be remiss not to include that development within the Mackenzie River Delta and Eagle Plains in Northwestern Canada lies within the range of the PCH, along with the Dempster Highway . Though we understand that the DEIS focuses on the Program Area, the PCH does not exist "in a vacuum" and the DEIS needs to demonstrate a complete and comprehensive view of the PCH exposure to development and infrastructure throughout its migration.	Information on the size of the CAH after development is included in the Draft EIS. Additional maps showing the seasonal range of the PCH were added
282.	Edward	Rexford	Native Village of Kaktovik	95607	15	Terrestrial Mammals	Pg. 3-173 The DEIS states "Future development in the areas of high, medium, and low oil and gas potential could present obstacles to caribou migrating from inland areas to the coast, where many Kaktovik residents hunt them." We have shared that we have difficulty hunting caribou in and around Kaktovik as we do not have access into the refuge in the summer time with motorized vehicles and because the caribou rarely, if ever, migrate to our village. We are only able to harvest caribou by traveling up the river corridors by boat. Mostly, caribou, even after calving, remain in the foothills of the Brooks Range and do not venture to the coast. We are concerned with the apparent absence of Traditional Knowledge in the DEIS.	Although PCH are often in the foothills during post-calving, PCH caribou do move along the coast during post-calving during some years and CAH caribou are often near the coast when mosquito harassment occurs.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
283.	Harry K.	Brower Jr.	North Slope Borough	95612	44	Terrestrial Mammals	BLM should acknowledge that the PCH displays some flexibility in calving locations, and that the calving area is much broader than the Leasing Program area.	Additional caribou maps were added.
284.	Harry K.	Brower Jr.	North Slope Borough	95612	62	Terrestrial Mammals	3.3.4 3-105 In paragraph 2, the final sentence needs to be clarified. Does the author imply that the phenology of plants nearer to the coast is delayed (cooler temperatures/delayed snow melt) and therefore has increased digestible nitrogen? If so, please state something to that effect.	Text was clarified.
285.	Harry K.	Brower Jr.	North Slope Borough	95612	64	Terrestrial Mammals	3.3.4 3-108 The statement "Red foxes are not known to inhabit sea ice" may be generally true. However, on more than one occasion, red foxes have been observed on the sea ice. One observation during polar bear capture work (2016) was of a red fox well out on the pack ice >75 miles from the coast. This was in Kotzebue Sound in the vicinity of the Red Dog Mine Port Facility. It would not be surprising if the niches of red and Arctic foxes begin to overlap more, particularly as red foxes adapt and the climate continues to moderate. Thus, competition between the two species may be expected to increase, with red foxes apparently able to out-compete Arctic foxes, especially when there are anthropogenic food sources available to support red fox populations.	This was rewritten to indicate that red fox do not generally inhabit sea ice.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
286.	Withheld	Withheld	—	96175	4	Terrestrial Mammals	In Appendix E, p. E-6, the DEIS states that "it is not likely that development on 2,000 acres in the calving grounds, insect relief habitat, or general summer habitat would reduce forage enough to affect caribou health or body fat reserves on a large scale. . . Caribou could still forage within the total footprint of a CPF and its associated satellite well pads, for example. Caribou abundance or availability and the subsistence use thereof would not likely be affected as a result of direct habitat loss." "Griffith et al. (2002) predicted that calf survival would decline linearly with the distance that the annual calving ground was displaced and predicted an 8 percent decline in annual calf survival if there were full development of the ANICLA [sic] defined 1002 Area, essentially the current program area" (Vol. 1, p. 3-115) The 1987 treaty between the U.S. and Canada regarding the conservation of the Porcupine Caribou Herd and its habitat (Vol. 1, I-5; Vol. 2, D-1) is recognized in this EIS but it does not say how the U.S. will mitigate the risk of irreversible damage or long-term adverse effects to the caribou or their habitat as a result of oil and gas leasing and development. I feel the EIS needs to have more clarity on how this treaty with Canada will be adhered to under each alternative.2	All applicable treaties have been considered, and the leasing program will not restrict the ability of subsistence users to continue subsistence practices. The EIS gives due consideration to the IPCA, and DOI has conducted consultation with the IPCB and with Canadian officials.
287.	Josie	Lopez	—	96188	4	Terrestrial Mammals	3) The DEIS fails to fully assess the significant impacts oil leasing and development would have on caribou, especially when caribou are most vulnerable to disturbance—during critical times of calving and raising young.	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
288.	David	MacMartin	Gwich'in Tribal Council	96239	3	Terrestrial Mammals	* How adaptable are caribou, in the face of development and climate change? * What are the differences in caribou's health between seasons and between sexes? How is a changing climate changing this? * How is climate change affecting caribou? How will the cumulative effects of climate change and development affect caribou?	The effects of climate change on caribou are discussed.
289.	David	MacMartin	Gwich'in Tribal Council	96239	4	Terrestrial Mammals	* How are caribou changing in response to cumulative effects? * How is the land changing? * How is Gwich'in harvest changing?	The effects of climate change and oil and gas infrastructure on caribou are discussed.
290.	Withheld	Withheld	—	96957	1	Terrestrial Mammals	Regarding caribou, would such disturbances interfere with migration or endanger these animals during times of great vulnerability such as calving season or when raising their young potentially leading to population decline that could have crucial consequences for a vast area of Alaska and Canada.	The EIS discusses the potential for calving caribou to be displaced by active roads and pads and discusses potential demographic implications of that displacement.
291.	Francis	Mauer	—	97757	8	Terrestrial Mammals	We have many concerns about the manner in which caribou information is presented in the DEIS. In numerous instances, the DEIS fails to provide documentation of data sources and fails to explain and justify why only selected portions of existing data are presented. Omission of pertinent information on caribou is also a major problem. Failure to present the full spectrum of existing caribou data and omission of key information renders the entire assessment of impacts to caribou inadequate. The DEIS also fails to interpret the full magnitude potential negative consequences of leasing and development on caribou populations, and it fails to provide a thorough analysis of impacts over the geographic range of the Porcupine caribou herd. The ecological consequences of reduced caribou populations due to oil development impacts must be addressed in a revised DEIS.	This comment does not contain specific recommendations. Additional details were added to maps.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
292.	Francis	Mauer	—	97757	9	Terrestrial Mammals	Map 3-21 shows a calving area that the Porcupine caribou herd (PCH) have apparently used greater than 40% of the time over 37 use years. The DEIS does not explain what years of data were used to generate this map, it does not explain if the 37 use years are a block of consecutive years or if there are gaps in the years used. The DEIS also does it provide any justification for showing only calving distribution used greater than 40% of those years. Yet this map more than any other sets the stage for an incomplete assessment of potential impacts associated with the various alternatives and mitigative measures that BLM is proposing for management of oil and gas leases and development within calving and postcalving habitats. The BLM must clarify the categories of information it presents and provide justification for its analyses so that readers can evaluate how the agency has arrived at its impact assessments.	Information on data used for PCH maps were added. Additional maps were included.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
293.	Francis	Mauer	—	97757	12	Terrestrial Mammals	The DEIS fails to adequately describe historic and current data regarding post-calving habitat use by the PCH especially for the western portion of the coastal plain where oil potential is believed to be greatest. Habitats used by the PCH during the calving and post-calving periods are ranked highest in sensitivity over all other periods of the herd's annual cycle.[24] Documentation of extensive use of the western coastal plain by very large numbers of the PCH date back at least as far as 1967.[25] An estimated 80,000 caribou were photographed along the coast of Camden Bay in 1972, during the first aerial photo census of the PCH.[26] Frequent use of post-calving habitat in the western coastal plain, including the Canning Delta, (Photo 1.) Camden Bay (Photo 2.) Katakturuk River and Marsh Creek areas, by the PCH was reported during the 1970's.[27] Heavy use of this portion of the coastal plain for post-calving has been consistent for most years to the present time.[28]During 2014 to 2017 some post calving aggregations in the western coastal plain have been estimated as high as 121,000 caribou.[29] In addition, the entire coastal region of the program area is frequently used for insect relief.[30] (Photos 3 & 4)	Additional information on post-calving distribution and groups size was added.
294.	Francis	Mauer	—	97757	13	Terrestrial Mammals	The DEIS relies heavily on certain information and assumptions that are drawn from interactions of the Central Arctic caribou herd and oil field development west of the Refuge. However, the DEIS provides little in the way of describing the differences between that scenario, and proposed development in the Arctic Refuge coastal plain. Understanding the specific characteristics of these two areas is fundamental in evaluating what potential impacts to expect if there is development on the coastal plain of the Refuge.	Additional information on differences between the CAH and PCH was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
295.	Francis	Mauer	—	97757	17	Terrestrial Mammals	The DEIS also fails to address the ecological impacts that would occur if there is a decline in abundance of the Porcupine caribou herd resulting from oil leasing and development. Such impacts would affect an area extending more than 250,000 square kilometers in Alaska and Canada.[50] Reduced abundance of caribou over this great expanse would have significant implications for a multitude of species and likely have cascading effects throughout the entire food web as well as altering basic nutrient cycles, and predator-prey systems.[51]	Text on associated impacts for a decline in the PCH was added.
296.	Wendy	Loya	USFWS United States Fish and Wildlife Service	97942	77	Terrestrial Mammals	Page 3-115: The DEIS states that, "Similar delays have not been observed in caribou in the existing North Slope oil fields, ..." Recommend modifying this statement to state: "Although CAH caribou have been observed to cross roads and pipelines in the existing North Slope oil fields during the summer insect season, fine-scale studies of CAH movements like those of caribou near the Red Dog mine road have not been conducted." As currently worded, it implies that a study has looked at this and not documented a delay. To our knowledge, there has not been a study looking at caribou movements at the spatial/temporal scales required to detect an effect for caribou in the oil fields.	Multiple papers reports have shown that caribou cross roads repeatedly during the summer with no delays of the magnitude reported for Red Dog road. In addition, many CAH use gravel roads and pads during the oestrus fly season. A new CAH study including integrated step-selection analysis has been conducted (Prichard et al. in review), others in progress. Added text on apparent delays in TCH movements across the Dalton Highway.
297.	—	—	United States Fish and Wildlife Service	97942	79	Terrestrial Mammals	Page 3-108: Recommend adding the following information to the discussion of muskox: "Another group of approximately 24 muskoxen inhabits the northwestern Yukon Territory, is commonly found near the Alaska-Yukon border and frequently wanders into the Refuge. They have been found as far west as the Aichilik River, on the boundary of the program area."	Additional text was added for clarification.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
298.	—	—	United States Fish and Wildlife Service	97942	80	Terrestrial Mammals	Page 3-108: Because of the importance of moose to subsistence hunters, and thus being included in both the conservation and subsistence purposes of the Refuge, we recommend including maps of current moose winter habitat and locations of moose found on spring surveys. The Service can provide these. We also recommend including the following information in the discussion of moose on the coastal plain: "Moose numbers east of the Canning watershed are currently low, but numbers in tributaries of the Canning (both east and west sides) are greater; some of these would be in the project area and other moose just outside the area to the west could be affected by equipment moving into/out of the area. Moose aggregate in brushy habitat along streams during winter, but then disperse across the ACP during summer (particularly pregnant cows). Moose are an important subsistence species for Kaktovik hunters, who are extremely interested in seeing moose populations recover to previous levels that will allow additional hunting opportunities."	Text and map was added
299.	—	—	United States Fish and Wildlife Service	97942	82	Terrestrial Mammals	Given the importance of moose as a subsistence species to local communities, we recommend adding a description of potential impacts of development on moose, including: disturbance of cows during calving and displacement during summer from coastal plain habitats with few predators, impacts to riparian vegetation that may reduce moose winter habitat, displacement of moose from winter habitat, disruption of movements to/from seasonal ranges, changes in predator abundance and distribution as a result of supplemental foods or habituation to humans.	Text was added.
300.	—	—	United States Fish and Wildlife Service	97942	83	Terrestrial Mammals	Page 3-1 10: Please include moose in the list of mammals (grizzly bear and muskox) that may be disturbed by winter seismic exploration.	Text was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
301.	—	—	United States Fish and Wildlife Service	97942	84	Terrestrial Mammals	Page 3-110: Although it is true that only a small proportion of the PCH remains on the ACP during winter, these caribou can number in the hundreds and are an important winter subsistence resource for Kaktovik hunters. Thus, localized disturbance or displacement of caribou during winter could have a significant impact on subsistence hunters. Recommend clarifying that although the number of PCH caribou on the ACP during winter is small, they are still an important subsistence resource for local communities.	Text was added.
302.	—	—	United States Fish and Wildlife Service	97942	85	Terrestrial Mammals	Page 3-113: Please provide citations for the sentence "Although some habitat damage would result from the use of ice roads and pads because the ice road is temporary, the long-term impacts would be considerably less than those associated with gravel roads and pads". Ice roads and snow trails have the potential to delay green-up in affected vegetation, and may retard growth during an entire growing season. This effect could be repeated every year that exploration and development occur. Additionally, these routes are likely to be much wider than a gravel road, with the potential to impact more habitat in a given year resulting in greater impacts to caribou habitat.	Text was modified.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
303.	—	—	United States Fish and Wildlife Service	97942	86	Terrestrial Mammals	Page 3-114: Recommend revising the sentence that begins "The patterns of CAH demography following development should be applied to the PCH with caution...", to "Demographic changes exhibited by the CAH during the development period cannot be extrapolated to the PCH due to the substantial differences between these herds and the geography of their ranges." For example, the CAH was at an historic low point in the herd's abundance when development began, whereas, the PCH is currently at an historic high level. In addition, compared to the CAH, the PCH has shown a much lower population growth rate during periods of increase; concentrated calving density of the PCH is much higher; areas surrounding the PCH calving grounds contain less high-quality forage and higher predator densities; and these areas exhibit more topographic relief than do the current PCH calving grounds or areas used by the CAH following displacement from their original calving grounds (Clough et al. 1987; Griffith et al. 2002)."	Text was modified for clarification
304.	—	—	United States Fish and Wildlife Service	97942	88	Terrestrial Mammals	Page 3-115, Paragraph 5: It is not clear how the definition of PCH calving area was determined to be the "concentrated calving area during >40% of years", as the most of the 1002 area is used for calving by either the PCH or CAH, and often both herds. Recommend providing additional discussion and citations as to how this was defined.	This section of the Draft EIS was incorrect, it was based on 95% kernels not concentrated calving areas. This was updated and more information added to maps. There is little evidence of large-scale CAH calving within the Project area.

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305.	—	—	United States Fish and Wildlife Service	97942	89	Terrestrial Mammals	Page 3-116: There is substantial uncertainty that design specifications outlined in ROP 23 will be sufficient to minimize disruptions to caribou movements in the 1002 Area due to substantial differences in geography and herd characteristics. Recommend adding a description of the substantial uncertainty that exists regarding whether these practices will be sufficient, and a statement that additional restrictions may be necessary to maintain the ability of the PCH to continue unrestricted use of the area.	Text on differences between herds was added. Exceptions, waivers, and modifications provide an effective means of applying "Adaptive Management" techniques to oil and gas leases and associated permitting activities to meet changing circumstances. The BLM or operators can initiate adaptive management modifications. See Instruction Memorandum 2008-032 and 43 CFR 3101.1-4 for additional details.
306.	Pam	Twitchell	—	98006	1	Terrestrial Mammals	Having carefully studied the draft EIS, I find none of the alternatives to be acceptable because the comparison of caribou herds on the North Slope Prudhoe Bay are far less animals on a much larger coastal plain area than the tremendous numbers on a much more narrow land mass coastal area. The construction at Prudhoe caused animals to abandon their traditional calving area. ANWR does not have a comparable area for the animals should they be forced to relocate - the comparison is not good science.	As described in the Draft EIS, the CAH calving area was displaced from roads, but the CAH still used the Kuparuk Oil Field after the calving season. Text on the narrowness of the Coastal Plain near the Refuge was added.
307.	Margi	Dashevsky	—	98093	8	Terrestrial Mammals	The BLM estimates that only 49 percent of the coastal plain is sensitive calving grounds for the Porcupine caribou herd, but this vastly undercounts the value of the coastal plain to the caribou, who use essentially all of the coastal plain during calving and post-calving when they are sensitive to disturbance. The agency fails to adequately address these impacts and to consider the full range of areas that are important to caribou.	The Draft EIS does indicate that areas outside the primary calving area are used in some years. Additional stipulation are added to the primary calving area because this area is used more frequently than other portions of the project area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
308.	John	Schoen	—	98097	5	Terrestrial Mammals	Differences in North Slope landscapes. Although there is oil exploration and development to the west of Prudhoe Bay and the northeastern NPR-A, there are major differences in these landscapes compared to the Arctic Refuge coastal plain. The refuge, as I said earlier, is very narrow, much narrower than the area to the west where oil and gas development has occurred. This has huge implications for the impacts on wildlife and fish and the natural landscape. For example, the Porcupine caribou herd, which is now at estimated 218,000 animals, laying an oilfield infrastructure over this narrow coastal plain would significantly disrupt the natural movements of this large caribou herd during calving and later when they are seeking relief from insects. We know the caribou, particularly large groups of cows and calves, are displaced up to 2.50 miles from oilfield infrastructure, including pipelines and roads.	Text on the narrowness of the Coastal Plain near the Refuge was added.
309.	Sarah	James	—	98099	2	Terrestrial Mammals	Anaktuvuk Pass, they get Western Arctic herd, which is 400,000 caribou that comes from Kotzebue. They get Toksook Bay, or something like that, caribou come to them. Central Arctic herd is their caribou. Sometimes Porcupine caribou go over there. Today since the pipeline was put in, I don't want to talk for them, but this is what I learned. We had a meeting with them. They having a hard time getting caribou because of the pipeline, even though these four different herd comes to their area from way back.	Information on the effect of pipelines on caribou s included in the EIS

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310.	Valanne	Glooschenko	—	98147	6	Terrestrial Mammals	Number five, many of the proposed requirements to protect caribou are drawn from requirements to protect caribou in the NPRA, the National Petroleum Reserve Alaska. This is in northwestern Alaska. The NPRA is not the same as the coastal plain. However, specifically the refuge's coastal plain is much narrower than the entire coastal plain, and the entire coastal plain is of critical importance to caribou life cycles. So protective measures in the NPRA are not going to be protective here. Protective measures in the refuge must be based on locations specific to the coastal plain, based on the best available science, specific only to the coastal plain and to its unique wildlife.	Text on the narrowness of the Coastal Plain near the Refuge was added.
311.	Anonymous	Anonymous	—	98156	1	Terrestrial Mammals	UNIDENTIFIED FEMALE SPEAKER: How come they don't have it all the way down to the coastline for the calving? That's where most -- they do their calving in the coastline.	The calving distribution based on available data is shown on maps. Additional maps were added.
312.	Tracy	Rempel	—	98181	2	Terrestrial Mammals	The BLM does not consider any Gwich' in communities within Canada when determining who could be 'appreciable affected' by changes to the Porcupine caribou herd. The DEIS fails to quantitatively assess the impacts of drilling on the Porcupine caribou herd. The BLM states that caribou would experience no major impacts from oil drilling, but provides little evidence to back up this claim.	The EIS has been revised to more fully analyze transboundary impacts, where applicable. Quantitative discussions of impacts at a leasing phase is highly speculative due to the lack of specificity of what, where, and when development may occur.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
313.	Brook	Brisson	Trustees for Alaska	98269	43	Terrestrial Mammals	The DEIS also omits important information about transboundary effects on the effectiveness of Canada's protection of PCH habitat. In particular, the DEIS fails to recognize that Canada has protected all of the PCH calving and post-calving habitat in the Canadian portion of the Arctic coastal plain, primarily through designation of the Ivvavik National Park (3,926 sq. mi., established in 1984) and Vuntut National Park (1,678 sq. mi., established in 1995), thus providing a total of 3.6 million acres of national park protection for the PCH in Canada.	The EIS has been revised to more fully analyze transboundary impacts, where applicable.
314.	Brook	Brisson	Trustees for Alaska	98269	129	Terrestrial Mammals	The discussion of climate change impacts on Terrestrial Mammals (page 3-109) fails to give any more than a passing mention to most of the climate vulnerable coastal plain species. ⁶¹⁹ Furthermore, the discussion of climate change impacts to caribou rightly describes some of the negative effects (vegetation change, increased insect harassment), but the section then concludes, without providing evidence of beneficial effects outweighing negative impacts, that: "Because climate change could involve both adverse and beneficial effects on caribou, it is not possible to predict the impacts on the PCH and CAH."	Text was modified to describe potential negative effects of climate change on other herds.

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315.	Brook	Brisson	Trustees for Alaska	98270	26	Terrestrial Mammals	BLM's findings for the Porcupine Caribou Herd are particularly concerning due to the fact that the DEIS's caribou studies do not use the best available science and improperly minimize impacts to caribou. For example, the DEIS does not place the Porcupine Caribou Herd in the context of the global condition of caribou populations, ignoring the risks posed by global declines of caribou. ¹⁶⁴² In addition, the DEIS omits important baseline studies, does not explain its assumptions in analyzing road, pipeline, air traffic, noise and human activity impacts on caribou, and the sources of data used to understand distribution of the herd are not transparent. ¹⁶⁴³ Further, impacts are insufficiently considered, including development like seismic exploration and road effects, which would greatly alter the current condition of the Porcupine Caribou Herd that lacks any major transportation networks.	Text was modified to describe potential negative effects of climate change on other herds. The fact that the PCH has less interaction with infrastructure (but it does have some such as the Dempster Highway) is discussed
316.	Brook	Brisson	Trustees for Alaska	98271	113	Terrestrial Mammals	Repeatedly throughout the DEIS, caribou use is depicted using the percentage of years that caribou are present, broken into four categories: < 20%, 20-30%, 30-40%, > 40%. ¹⁰⁹⁴ As a minor point, it is unclear exactly where the bounds lie. Using < 20% as the first category implies that 20% occurs in the next category, where it is the lower bound, while using > 40% as the final category implies that 40% occurs in the previous category, where it is the upper bound. If both the lower and upper bounds are included in the bins, where does 30% lie, which is listed in both the 20-30% category and the 30-40% category? Either 30% is being double counted, which presents problems, or it occurs in one category or the other, in which case the two categories are of uneven size. This should be clarified by BLM.	This was clarified.

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317.	Brook	Brisson	Trustees for Alaska	98271	114	Terrestrial Mammals	A much more important issue is the lack of justification that is given for using these percentages to define caribou use. The DEIS "defines important calving grounds as the high-use PCH calving area (area used in greater than 40 percent of years)" ¹⁰⁹⁵ and apparently uses a similar definition for post-calving. ¹⁰⁹⁶ No justification is given for why only areas used in more than 40% of years are important. A clear biological rationale, grounded in the best-available science, must be stated. As is noted below, such a determination of "important" habitat neglects the value of more occasionally used calving and post-calving areas for the PCH, including those where large concentrations have occurred less frequently but in large numbers outside of the areas depicted as "high use" in Map 3-21 and Map E1. BLM must explain why an area used lightly in more than 40% of years is considered more important than an area used heavily in 35% or even 20% of years	Stipulation 7 is applied to areas that are used more frequently, although all areas of the project area could be in the 95% calving area at some point, the NSO or no leasing cannot be applied to the entire Project Area. The current boundaries were determined based on historic calving distributions and with other stipulations for other resources in mind.
318.	Brook	Brisson	Trustees for Alaska	98271	115	Terrestrial Mammals	Furthermore, explanation of each of the percentage use categories and their biological importance needs to be provided by BLM since these categories are used as the key impact indicators for analyzing road, pipeline, air traffic, noise and human activity impacts on caribou. ¹⁰⁹⁷ They also represent the main quantitative indication of impact to caribou in the DEIS: acres with differing levels of use during calving and post calving that overlap with varying lease restriction categories. ¹⁰⁹⁸ In light of this, it is crucial that BLM be clear on why these are biologically-meaningful and sufficient for demonstrating impact or lack thereof.	These categories provide information on how frequently these areas have been used in the past, and presumably has some predictive capability for how often they will be used in the future. Potential changes from climate change or decadal climate patterns are discussed.

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319.	Brook	Brisson	Trustees for Alaska	98271	116	Terrestrial Mammals	As is pointed out above, the “proportion of years areas are used by PCH per season” is the key impact indicator used in the DEIS for analyzing road, pipeline, air traffic, noise and human activity impacts on caribou.1099 Similarly, the “proportion of CAH caribou using the program area alternatives by season (based on percent of seasonal use density from kernel density)” is used to evaluate impacts of roads and pipelines to the CAH.1100 Caribou location data are also used to calculate the acreages and percentages of use by caribou.1101 Because this information underlies the analyses of impact, it is crucial that the data sources be specified in such a way that any member of the public could evaluate the quality of the data. This includes providing clear citations to publicly available publications/reports that describe and visualize the data sources or, for original telemetry data, providing detailed information on the timeframe of data, sample size (both in terms of number of individuals and frequency and duration of locations), type of technology used to obtain locations, methods used to depict location data, and more. This is not done for caribou in the DEIS.	Additional information was added to the figures.

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320.	Brook	Brisson	Trustees for Alaska	98271	117	Terrestrial Mammals	No source documentation for caribou locations is given in Chapter 3. Some additional information is given regarding data sources in the DEIS appendices, but this is still insufficient to evaluate data quality. Maps 3-21, 3-23, and E-1 - all depicting the seasonal distribution of the PCH in various forms - reference BLM GIS 2018 and Yukon Environmental GIS 2018. Map 322, depicting the seasonal distribution of the CAH, references BLM GIS 2018, Prichard et al. 2018, and ABR GIS 2017. The BLM GIS 2018 dataset is the same source that is cited for potential fossil yield classification in program area geological bedrock units, 1102 polar bear denning habitat, 1103 cultural resource site information, 1104 basic acreage calculations, 1105 and more. It is thus apparent that it is an extensive dataset, containing a variety of information. The precise contents of this information, however, are unclear as the reference given for it simply states "GIS data used in the Coastal Plain Oil and Gas Leasing Program EIS alternatives, affected environment, and impact analysis. Alaska Bureau of Land Management." 1106 That conveys no information about the actual sources of data within this massive dataset. Similarly, Yukon Environmental GIS 2018 is referenced as "GIS data provided by Yukon Environmental, Mike Suitor, July 2018." 1107 Again, this gives no clarity as to the actual contents of this dataset. ABR GIS 2017 is referenced as "GIS data of the Central Arctic Herd caribou, data provided by Alaska Biological Research." 1108 Here, at least, the contents of the GIS dataset are specified - CAH data - but this still gives none of the crucial details needed to evaluate the quality of the maps made from those data. Unfortunately, Prichard et al. 2018 is not included in the references of either DEIS volume, so it is	More information on data sources were added to the maps.

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320. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	impossible for the reader to evaluate what data might have been contributed from this source. BLM has posted some geospatial data on its Arctic Refuge Coastal Plain Oil and Gas Leasing EIS ePlanning page, 1109 but this does not include any caribou data. Instead, there is a statement that "[d]ata from sources external to BLM will not be distributed." The ReadMe file on the ePlanning page lists CAH and PCH among the "Other Affected Environment GIS Data" but simply says to contact ADF&G and Yukon Department of Environment, respectively. This is insufficient. BLM needs to correct these omissions by providing an appendix that clearly specifies all data sources contained within BLM GIS 2018, Yukon Environmental GIS 2018, ABR GIS 2017, Prichard et al. 2018 and any other GIS databases used in the EIS process in such a way that the quality and information above about sample sizes and methods can be ascertained. Without this information, proper review and evaluation of the claims made by BLM are impossible. We note that any information BLM relies on in its decision should be included in the record as well.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
321.	Brook	Brisson	Trustees for Alaska	98271	121	Terrestrial Mammals	In addition, no statement is made about what depiction of data is used in Map 3-21. For example, if a kernel density estimate is used, that should be stated and the percentage contour used to depict use should be shown. This is not clear from the information as conveyed. Also, if the USGS and USFWS kernel analyses of calving distribution ¹¹¹² were used, this should be made clear. These were based on the locations where collared PCH caribou gave birth. Such depictions are useful for displaying variation in birth locations across years, but underestimate use of areas during calving as PCH cows continue to move after calves are born, often moving westward toward and within the program area. ¹¹¹³ Only using birth sites to represent calving can thus bias the depiction of calving-season use away from the more western portions of the Coastal Plain, resulting in an incomplete evaluation of impacts. It is also possible that the DEIS did not use previously published kernel density estimates but rather created new depictions based on original telemetry records. Whatever data sources were used, these need to be made very clear and the methods of depiction presented in greater detail.	Additional information was added to the figures.
322.	Brook	Brisson	Trustees for Alaska	98271	122	Terrestrial Mammals	For the CAH seasonal use depictions in Map 3-22, it is stated in the legend that kernel density isopleths are depicted. However, no indication is given of the time period represented by the data going into the kernel density analysis, nor the sample size nor age and sex information of the depicted animals. All of this information can influence the resulting depictions of space use and the way visualizations should be interpreted. It is essential that BLM provide detailed information about the data being represented in the DEIS to enable adequate review and assessment of impacts.	Additional information was added to the figures.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
323.	Brook	Brisson	Trustees for Alaska	98271	123	Terrestrial Mammals	Furthermore, BLM needs to explain why different depictions of use are presented for the PCH and the CAH maps and in the analyses of impacts described in Appendix F, 1114 what data gaps may exist, and why these represent reasonable and biologically meaningful depictions of caribou use.	Additional information was added to the figures.
324.	Brook	Brisson	Trustees for Alaska	98271	124	Terrestrial Mammals	Specifying the years of data used and showing their sources is important for a robust analysis. To our knowledge, the last kernel density depictions made publicly available for the PCH were presented in the Arctic Refuge Revised CCP1115 and spanned 1983-2010. Coarse polygon data showing general calving and wintering areas for 2011-2017 were displayed in a newsletter by the Alaska Department of Fish and Game (ADF&G), 1116 but without documentation of methods or use of kernel density estimates or other depictions showing relative use by collared animals. The public thus has no clear way of knowing what the full extent of Coastal Plain or relative use by the PCH has been since 2010. Nor is it clear what data were collected post-2010, or if any of these data were included in the information used in the DEIS maps and Appendix J. The description of background caribou information described the percentage of time PCH females calved in the 1002 Area between 1983-2001. 1117 This, however, is only 19 years of data and Map 3-21 says there are 37 years of calving data depicted. This suggests that 2002-2018 are included (bringing the total to 36 years), but also requires at least one older year of data. Maps of caribou calving stretch back at least until 1961, 1118 and include the period of 1972 through 1986. 1119 Some of this historic information may have been used, but this is not specified.	Additional information was added to the figures.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
325.	Brook	Brisson	Trustees for Alaska	98271	125	Terrestrial Mammals	Also, previous depictions of caribou calving habitat have often included both annual calving grounds and annual concentrated calving areas. BLM acknowledges such distinctions in the DEIS but does not specify which representation of calving is being depicted in Map 3-21.	Additional information was added to the figures.
326.	Brook	Brisson	Trustees for Alaska	98271	126	Terrestrial Mammals	The note on Lease Stipulation 7 states that "PCH primary calving habitat area was defined as the area with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed."1120 Mention of "more than 40 percent of the years surveyed" makes this statement seem relevant to the depiction in Map 3-21. Mention of "the area with a higher-than-average density" makes it likely that the statement is referring to concentrated calving areas, rather than annual calving grounds, though notably the definition given in the DEIS for an annual concentrated calving area only calls it "an area of relatively high use,"1121 not "higher-than-average density," so this is not certain. It is thus possible that Map 3-21 only depicts overlap in concentrated calving, which would not present a full picture of the important areas for PCH calving (see below for more details). It is also possible that annual calving ground overlap is displayed in Map 3-21, and that the "PCH primary calving habitat area" as defined in Stipulation 7 is not depicted. Either way there is a problem. Representations of space use by caribou will look very different depending on whether the extent of calving or extent of concentrated calving are being depicted. The various forms of uncertainty raised above make it impossible to adequately review the information presented.	The Draft EIS maps incorrectly identify these kernels as concentrated calving areas, they were based on 95% kernel contours. This is corrected in the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
327.	Brook	Brisson	Trustees for Alaska	98271	127	Terrestrial Mammals	Greater clarity is needed in the definition used for "calving" as the definition quoted above from Lease Stipulation 7 leaves several ambiguities. For example, what does "about to give birth" mean and how is it determined when female caribou are about to give birth? Calving should cover both the birth site and movements thereafter	The 95% kernels used to define the calving area were created by Environment Yukon based on calving cows during the calving season. Reference to 'about to give birth' was removed. Additional information was added to the maps.
328.	Brook	Brisson	Trustees for Alaska	98271	129	Terrestrial Mammals	A final issue with the lack of clarity as to data sources in Map 3-21 regards the differences in what is being compared between the various time periods. The pre-calving, early summer, and mid-summer depictions reflect the distribution of all collared animals, according to the text in Map 3-21 (though with different numbers of years of data for each, ranging from 2734). The calving period map depicts both cows and calves (for 37 years of data), while the post-calving map represents the distribution of just cows (with only 22 years of data). No explanation is given for why these different depictions are used or how the varying number of years of data were selected.	Additional information was added to the figures.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
329.	Brook	Brisson	Trustees for Alaska	98271	130	Terrestrial Mammals	One concern is that habitat use patterns are different for male and female caribou throughout much of the year, so distribution maps based on all animals versus those for just cows (or cows and calves) may be very different. Another concern is that locations of calves are likely biased due to a lack of random selection. Some calves have been collared along with their mothers for use in nutrition studies.¹¹²³ The locations of these calves will not be independent from those of their mothers, thus over-representing the importance of those cows. Other calves were collared in high-density and low-density calving areas to compare survival rates.¹¹²⁴ These also would lead to over-representing some use areas and under-representing others. It is unclear whether data were derived from one, both, or neither of these sets of studies. Furthermore, it is possible that only parturient cows were depicted in the calving data but all cows, including those that did not have a calf in a given year, were included in the post-calving group. This is not specified. Without sample size information and other details, it is impossible to know how these data choices might affect the results.	Data layers were created by Environment Yukon. Based on their explanation, no calf collars were used. Calving layers were for parturient cows. the post-calving layers were from all cows. All cows and bulls were used in other seasons, but few males were collared.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
330.	Brook	Brisson	Trustees for Alaska	98271	131	Terrestrial Mammals	There are biological reasons to focus on the distribution of cows during the calving and post-calving seasons and to show all animals at other times of the year, as well as logistic reasons such as the greater number of collars that have been deployed on cows compared to bulls. Any such depictions, however, should be presented in two sets of maps: one with just cows each season and the other with all animals in each season. Both sets of maps should specify the sample size broken down by sex, age, and parturition status and should clearly state the specific years of data depicted, with their sources. Doing this will enable adequate evaluation of the contribution of bulls, cows and calves to the seasonal distribution representations and will allow a more robust consideration of use of the Coastal Plain. The BLM should include such maps in a revised EIS.	Additional information was added to the figures.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
331.	Brook	Brisson	Trustees for Alaska	98271	133	Terrestrial Mammals	Appendix E points out that “the precise location of infrastructure, and thus the extent of overlap between surface disturbance and the high-use PCH calving area, is unknown” ¹¹³¹ and concludes that “[i]t is likely that there would be no or very little surface disturbance within the high-use PCH calving area, given that the hypothetical development scenario suggests that future development would move from west to east, would be concentrated along the coast, and that lessees would attempt to minimize lengthy travel from coastal and existing infrastructure, and between CPFs.” ¹¹³² Such a conclusion appears to be more of a hope, rather than any kind of analytical result. It is especially called into question as the description of the hypothetical development scenario in Appendix B points out that “[e]stimating the level of future oil and gas activity in this area is difficult at best” ¹¹³³ and that “[t]he petroleum-related activities projected in this hypothetical development scenario is [sic] useful only in a general sense. This is because the timing and location of future commercial-sized discoveries cannot be accurately predicted until exploration drilling begins.” ¹¹³⁴ In light of these admissions, as well as the failure of the DEIS to adequately incorporate all available research on oil and gas potential, its geographic extent and intensity with respect to potential prospects and plays, and economic factors, ¹¹³⁵ it is unreasonable for the analysis of impacts to caribou to rely so heavily upon the assumptions of the hypothetical development scenario and to conclude that there would be little impact from development as a result, especially when other options are available.	The alternatives and analysis methodology were developed using best available science, including participation and review by cooperating agencies and resource experts to minimize disturbance and impacts on sensitive resources, including caribou populations. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies or monitoring may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
332.	Brook	Brisson	Trustees for Alaska	98271	136	Terrestrial Mammals	In addition to adopting the CCE approach or preparing a comparable analysis in a revised DEIS, BLM must also build upon the CCE approach, including the following aspects: 1. Population simulations in the CCE were conducted over a 10-year period, from 20172027.1143 Ultimately, oil and gas impacts are predicted by the DEIS to last up to 130 years. 1144 Thus, population consequences of development should also be modelled across a similarly long time span. 2. More robust modeling of caribou movement is needed. The movement submodel in the CCE does not truly model caribou movement, but rather uses 414 movement paths from satellite collared caribou between 1985-2017 to reflect realistic movement patterns.1145 These were overlaid on the environment as a way to sample environmental data from movement paths, including whether the individual was within the zone of influence of development on a given day. Use of existing movement paths, however, means that while the energetics of movement and costs to foraging were altered in the presence of development, distribution was not. As is described below, many records indicate alteration in caribou distribution in the presence of development. These are not reflected in the CCE. Options exist for modeling animal movement, with the opportunity to parameterize movement models based on telemetry data.1146 Movement models have previously been used to examine development impacts including diversion and delay of caribou in northern Alaska.1147 These should be improved upon by parameterization with caribou telemetry data or other available techniques should be used and integrated into a quantitative approach like that of the CCE. 3. The influence of edge effects that extend across lease restriction categories needs to be	The analysis of Russell and Gunn (2019) was discussed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
332. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	included in the model. We describe in detail below the importance of recognizing that development impacts may extend across lease restrictions boundaries into no surface occupancy and no leasing areas. In the rationale given for Map Designation 5 in Table 13, Russell and Gunn note that displacement and disturbance will occur across boundaries from adjacent development, 1148 but do not penalize this in their model. Absent a realistic spatial development buildout, the DEIS should apply an approach that simulates locations of development 1149 to assess where edge effects will intrude across lease restriction boundaries or assume an overly cautious approach and include penalties along all lease restriction edges in light of the potential for adjacent development. 4. The model needs to rigorously address all operations and activities that may occur under each alternative and not be prohibited by mitigation measures. 1150 For example, this may include aircraft takeoffs and landings, water withdrawals, seismic exploration, gravel mining, construction of water reservoirs, exploratory drilling, and more. 1146 E.g., Morales et al. 2004.; Patterson et al. 2008.; Barto? et al. 2009.; Patterson et al. 2009.; Avgar et al. 2015. 1147 BLM. 2014 at 353 - 354. 5. Climate variability was considered in the CCE in three categories - poor conditions, average conditions, and good conditions - represented by the first quartile, mean, and third quartile of climate indicator records from 1979-2016. 1151 Examining impacts to caribou under varying climate conditions is an important step in a quantitative analysis and an improvement on the approach taken in the DEIS (see below). However, it is also important to include conditions that go beyond the historic range of variability in climate in recognition of the rapid and unprecedented changes	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
332. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	happening in the arctic, that are often without analog. Climate projection models that predict future conditions, even when those are novel with respect to the past, should be analyzed along with consideration of the historic range of variability. In particular, such climate projections need to be applied to the evaluation of impacts under the proposed alternatives. While the CCE was run under different climate conditions for the baseline and full-development conditions, the analysis of DEIS action alternatives was run only under average climate conditions. ¹¹⁵² For a robust analysis of impacts under the proposed alternatives, the influence of climate variability - shown to matter in the baseline and full development scenarios - must be considered. 6. The CCE model was only run for the PCH. BLM must perform its quantitative analyses for both the CAH and the PCH as both herds regularly use the Coastal Plain. This will allow a more accurate consideration of impacts to the CAH, rather than just asserting without support that "potential impacts on CAH caribou are expected to be low" for each alternative. ¹¹⁵³	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
333.	Brook	Brisson	Trustees for Alaska	98271	137	Terrestrial Mammals	In developing quantitative analyses of development impacts on caribou, whether following a framework like that of the CCE or other published approaches, it is important that season-specific impacts be analyzed across the full annual ranges and cycles of the PCH and CAH. It also is important that while such models may at times rely upon the best-available caribou telemetry data, validation of the models be conducted using the full range of historic records of caribou habitat use, including those collected using field observations, telemetry and aerial surveys. This is important to ensure that model results conform with caribou behavior and space use over the longer timeframes considered in the DEIS (e.g., up to 130 years	The CCE in Russell and Gunn 2019 was discussed.
334.	Brook	Brisson	Trustees for Alaska	98271	139	Terrestrial Mammals	As we point out throughout our comments, the calving period is not the only important time for caribou. Pre-calving arrival on the calving grounds, post-calving and summer insect relief are also critical if caribou are to successfully birth and grow their calves as well as replenish their own body condition to be ready for the subsequent winter. Coastal Plain use is thus not just important during the calving period, but across the rest of the year as well. An animation of caribou locations from collared animals created by CARMA, 1160 the CircumArctic Rangifer Monitoring & Assessment Network, illustrates well that the entirety of the Arctic Refuge Coastal Plain is used by caribou over time. The DEIS needs to clearly reflect the full array of historic data that represent use of the Coastal Plain.	Additional caribou maps were added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
335.	Brook	Brisson	Trustees for Alaska	98271	141	Terrestrial Mammals	The Arctic Refuge Coastal Plain is constricted in a relatively narrow band between the Beaufort Sea coast on the north and mountainous terrain on the south, 1165 much less expansive than the coastal plain used for calving by the CAH and other herds farther west. In spite of this, the Arctic Refuge Coastal Plain is used for calving by one of the largest herds in North America, with about 8 times as many caribou calving in the Refuge in recent years on about one-fifth the amount of available habitat compared to that used by the CAH further west where current oil development is centered. While the CAH shifted its calving distribution away from industrial areas as they were developed, 1166 there are not the same opportunities to do so for the PCH. Displacement and disruption of calving and post-calving caribou by oil exploration and development in the Refuge, where the densities of caribou are very high, is likely to have far greater consequences than to the west. Although we pointed out the influence of the narrower Coastal Plain in the Arctic Refuge as part of our scoping comments, the DEIS fails to include implications of this feature for caribou and must do so in a revised DEIS.	Information on the narrowness of the Coastal Plain was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
336.	Brook	Brisson	Trustees for Alaska	98271	143	Terrestrial Mammals	In addition, comparison of population patterns for the CAH and PCH would be enhanced by inclusion of quantitative population data in the DEIS. This is currently lacking. BLM needs to provide these data for the CAH both for the pre-oil and gas exploration and development period, particularly prior to Prudhoe Bay exploration in 1968 and intense construction of the Trans-Alaska Pipeline between 1969-1977, as well as for the period following exploration and development. Along with data from both periods, any limitations of the data should be discussed. This will allow a more robust assessment of population trends and potential development impacts.	The EIS contains a figure of herd populations sizes. The CAH was first recognized as a distinct herd in the 1970s, so there is no specific information available prior to development of Prudhoe Bay. References to reviews of caribou in the area were added.
337.	Brook	Brisson	Trustees for Alaska	98271	146	Terrestrial Mammals	Second, the DEIS points out that "PCH caribou have had much less exposure to human development and activities than have CAH caribou..., so they would be expected to have stronger reactions to infrastructure than CAH caribou for some years."1183 It is unclear why this is not reflected in the expected displacement away from infrastructure. Instead, the DEIS says that the same level of displacement "observed at existing North Slope oil fields would be expected in the program area with similar development and mitigation design."1184	The available data suggests that the CAH was displaced 4 km during calving in the initial years after construction (Cameron et al. 1992).

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338.	Brook	Brisson	Trustees for Alaska	98271	147	Terrestrial Mammals	Third, assuming the same displacement distance as observed with the CAH ignores the potential influence of hunting. Hunting is not allowed from roads in the Prudhoe Bay complex, 1185 but will be allowed for both subsistence and non-subsistence hunters in the Coastal Plain according to the DEIS. 1186 Previous studies have shown that hunting may increase avoidance responses of ungulates to infrastructure. 1187 Indeed, one study found road effects on caribou extended up to 15 km from roads some years during hunting season. 1188 The presence of hunting in the Coastal Plain will create different conditions for the PCH compared to those experienced by the CAH, potentially increasing the effect of displacement from roads and facilities.	Text was added for clarification.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
339.	Brook	Brisson	Trustees for Alaska	98271	149	Terrestrial Mammals	The DEIS downplays the potential impact to caribou and their habitats from seismic exploration, such as the geographic extent of potential operations across the Coastal Plain as well as the likelihood of repeated surveys over the life of the oil and gas program. 1191 The DEIS states that direct impacts on caribou from seismic exploration are expected to be negligible due to the low level of use by caribou during the winter.1192 There are two problems with this conclusion. First, it ignores that the Coastal Plain has at times been used in the winter by a sizable proportion of the TCH1193 and regularly by scattered groups of the CAH.1194 That such events are rare for the TCH and affect relatively small numbers of the CAH does not necessarily mean the impacts are insignificant. What would the consequences be for the CAH, TCH or another caribou herd if, in a year when conditions drove them to use the Coastal Plain, there were inhibited from doing so by seismic exploration or other activities and infrastructure? It is surprising that BLM gives no consideration to this possibility, even if rare, given that the DEIS acknowledges this occasional use of the Coastal Plain by the TCH.1195 This should be considered and the potential consequences if it were to occur should be clearly stated and supported by scientific justification.	The data do suggest that the area has low levels of use by caribou during winter. A portion of the TCH used the area one winter and those animals had high mortality.
340.	Brook	Brisson	Trustees for Alaska	98271	153	Terrestrial Mammals	Furthermore, scientific information must be evaluated for impacts to caribou and their habitat from all elements of seismic operations, including seismic trails, camp and fuel move trails, and snow trails, as well as any summer "stickpicking" clean up or follow-up ground work conducted in summer associated with seismic exploration.	Information on summer activities associated with winter seismic information was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
341.	Brook	Brisson	Trustees for Alaska	98271	157	Terrestrial Mammals	It is the responsibility of BLM to evaluate, using the best available scientific information, the potential costs for caribou population growth of being unable to access nutritious forage for one or a few years in a row due to development, rather than just asserting that an abundance of habitat means there will be no consequences of displacement.	Section 3.3.4 addresses caribou displacement impacts.
342.	Brook	Brisson	Trustees for Alaska	98271	159	Terrestrial Mammals	As is noted above, caribou rely on movement to access nutritious forage and avoid predators and insects. Freedom to roam is thus an important element of caribou habitat. There are no roads today in the Arctic National Wildlife Refuge, nor in the adjacent Ivavik and Vuntut National Parks in Canada. The DEIS fails to fully consider the unique risks to unimpeded access that major transportation networks and oil field roads pose to caribou movements and use of the Coastal Plain. Those risks are exacerbated by the narrowness of the Coastal Plain in the Arctic Refuge.	The potential impact of roads is discussed.
343.	Brook	Brisson	Trustees for Alaska	98271	160	Terrestrial Mammals	The hypothetical development scenario states, without scientific analysis: In caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration. Figure B-2, Conceptual Layout of a Caribou Area Stand-alone Oil Development Facility, shows how the hypothetical layout could be adjusted for caribou mitigation if deemed appropriate by permitting agencies. ¹²²³ Figure B-2 depicts a slightly different layout of the roads radiating out from the Central Processing Facility to additional "satellite" drill sites, but no explanation is provided for assumptions about why it would be expected to have a differing impact on caribou compared with Figure B-1.	The orientation of roads and pads would be determined during subsequent NEPA processes if leasing occurs. Roads and pad design can be altered based on data on caribou movements to minimize crossings or avoid placing structure at areas where caribou could be funneled by lakes, rivers, or roads.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
344.	Brook	Brisson	Trustees for Alaska	98271	161	Terrestrial Mammals	Furthermore, no analysis was provided for how a major road and transportation system and infield roads would affect caribou movements. BLM needs to address these issues using strongly supported scientific information.	The potential impact of roads is discussed. Additional data from CAH was added.
345.	Brook	Brisson	Trustees for Alaska	98271	167	Terrestrial Mammals	The way many of the impacts to caribou are described in the DEIS, including what is mentioned and what is omitted, serves to downplay the possible magnitude of negative effects. For example, while the DEIS properly acknowledges that major negative impacts to calving caribou and displacement of caribou from infrastructure will be adverse, long-term, and planning area wide, 1261 in multiple instances the phrasing of the DEIS serves to downplay the importance of this impact. This starts in the Affected Environment descriptions of calving on the Coastal Plain. The description of PCH calving switches the units of measures in ways that cover up the importance of the Arctic Refuge Coastal Plain for calving. From 1983-2001 the DEIS states that "the annual percentage of PCH females calving in the ANILCA 1002 Area (essentially the program area) averaged 42.7 percent." ¹²⁶² Presumably this refers to the percentage of collared PCH females, not all calving females, but this is not clear because no data source is cited for this claim. The presence of the same statistic in Griffith et al. ¹²⁶³ leads us to assume that was the source of this information. BLM must clearly cite its sources rather than leaving the reader to infer data sources from their own research.	Information on the number of years the project area was used for calving was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
346.	Brook	Brisson	Trustees for Alaska	98271	168	Terrestrial Mammals	n any event, reporting only the average percentage makes it appear that the Arctic Refuge Coastal Plain is used for calving by less than half of female caribou. Examination of the presumed source, however, reveals that while the average percentage of females calving in the 1002 Area from 1983-2001 was 43%, the percentage use each year "was quite variable" and ranged from 0-92%.¹²⁶⁴ Only reporting the average downplayed the fact that in some years use was quite high. From 2000 to 2011 the DEIS description is of the number of years in which "annual concentrated calving areas occurred in the Yukon or near the Yukon-Alaska border."¹²⁶⁵ The resulting claim of 8 out of 12 years where concentrated calving occurred mostly outside of the program area again suggests the relative unimportance of the Coastal Plain for calving. This time a source is given. Review of that source reveals that in addition to reporting the trend of concentrated calving primarily occurring outside of the program area from 2000-2011, USFWS also reports that "[f]rom 1983-1999, concentrated calving areas were in Arctic Refuge in all years and also occurred in the Yukon in 3 of 17 years."¹²⁶⁶ Had the same unit of measure been used for both the 1983-1999 period and 2000-2011, it would have presented a very different picture. As is noted above, historic records point to use of the Arctic Refuge Coastal Plain for caribou calving for thousands of years. Furthermore, as we discuss above, even in years in which the PCH primarily calved in Canada, the herd has travelled to the Arctic Refuge Coastal Plain for food and insect relief during the post-calving period.¹²⁶⁷ It is important that BLM reflect the importance of the Arctic Refuge Coastal Plain in the EIS and not downplay it by selectively choosing which statistics to report.	Presenting actual percentages is more precise, but information on the number of years the project area was used for calving was added.

S. Public Comments and BLM Responses (Terrestrial Mammals)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
347.	Brook	Brisson	Trustees for Alaska	98271	169	Terrestrial Mammals	Impacts to caribou are also minimized in the DEIS by including them outside of the main caribou section. While the DEIS acknowledges that "future oil and gas infrastructure in the program area, particularly in the PCH calving grounds, could cause a shift in calving distribution during some years, which would likely reduce calf survival and halt herd growth," potentially resulting in reductions in calf survival and herd numbers,1268 this comes in the Subsistence Uses and Resources section, rather than in the Terrestrial Mammals section. Impacts to caribou must be clearly stated in the sections on caribou so that the public is able to determine the full weight of potential impacts.	The impacts of calving displacement on calf survival are discussed in the terrestrial mammal section. Additional text from Russell and Gunn (2019) was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
348.	Brook	Brisson	Trustees for Alaska	98271	170	Terrestrial Mammals	Much of the analysis of potential development impacts on caribou in the DEIS relies on the hypothetical development scenario and descriptions of expected impact. Different descriptions of the amount of the environment affected, however, prevent clear evaluation of what the true impacts may be. For example, in Chapter 3, the DEIS states that the hypothetical schematic of an anchor-field footprint totals 750 acres, resulting in 633,000 acres of potential disturbance and displacement for caribou.¹²⁶⁹ Presumably the 750 acres is representative of Figures B-1 and B-2, as the description "(one CPF and 6 radiating 8-mile access roads to 6 drill pads, including an STP pad and a 30-mile access road, totaling 750 acres)"¹²⁷⁰ precisely matches what is shown in those figures.¹²⁷¹ In Appendix E, however, BLM states: Surface disturbance associated with one CPF in the high-use PCH calving area could total up to 488 acres based on Figure B.2., Conceptual Layout of a Caribou Area Stand-along Oil Development Facility, in Appendix B. Depending on the configuration of the oil field, displacement of maternal caribou around 488 acres of surface disturbance could total up to 118,500 acres (4 percent) of the high-use calving area.¹²⁷² This reference to the hypothetical development figure states that the facility acreage is only about 65% of that listed in Chapter 3, resulting in an estimated displacement area that is less than 20% of the size reported in the Chapter 3. Simple addition of the acreages shown in Figure B-2 yields 732 acres total,¹²⁷³ suggesting the Appendix E estimate may be incorrect. This difference is very disturbing, especially as it seems that BLM is drastically underestimating effects in its ANILCA 810 subsistence analysis that are clearly acknowledged elsewhere.¹²⁷⁴	Surface disturbance associated with one CPF in the high use PCH calving area could total up to 488 acres based on Figures B1 and B2, Conceptual Layout of a Caribou Stand Alone Oil Development Facility in Appendix B. These facilities do not include coastal facilities and access roads to coastal facilities that would be located outside of the high-use PCH calving area. Depending on the configuration of the oil field, displacement of maternal caribou around 488 acres of surface disturbance could total up to 118,500 acres (4 percent) of the high use calving area based on 2.49 miles of observed displacement around infrastructure on the North Slope during calving.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
349.	Brook	Brisson	Trustees for Alaska	98271	171	Terrestrial Mammals	Caribou have been shown to respond negatively to mining, exhibiting displacement from the area around mines ¹²⁷⁸ and alteration of movement behavior in response to mining roads and traffic. ¹²⁷⁹ The DEIS acknowledges that studies have shown larger areas of displacement for caribou than reported around roads in the Prudhoe Bay area, ¹²⁸⁰ but nevertheless bases its displacement analyses on a 4 km road displacement distance and ignores any compounding effects of mining removing additional caribou habitat. Displacement due to mining may be 3-5 times larger than the 4 km area that BLM assumes for roads. ¹²⁸¹ Furthermore, Required Operating Procedure (ROP) 24 has a goal of minimizing the impact of mining on air, land, water, fish and wildlife ¹²⁸² but no mention is made of caribou, nor do any provisions prohibit mine placement within caribou habitat, NSO or no leasing areas. ¹²⁷⁸ Boulanger et al. 2012.; Plante et al. 2018. ¹²⁷⁹ Wilson et al. 2016.	The mining discussed in Boulanger et al. (2012; ~ 9.7 and 29.9 km ² open pit mines with substantial dust deposition) is on a much different scale from gravel mining likely to occur in the project area.
350.	Brook	Brisson	Trustees for Alaska	98271	174	Terrestrial Mammals	Another example comes from the DEIS assessment of road mortality risk to caribou. The DEIS states that traffic management and vehicle use plans and prohibitions on chasing caribou with vehicles "sufficiently mitigate mortality risk to caribou on the North Slope." ¹²⁸⁶ The citation given for this statement is a personal communication by Alex Prichard, one of the consultants who helped prepare the Terrestrial Mammals section of the DEIS. ¹²⁸⁷ Serving both as an author of the DEIS and as the source of a personal communication about the sufficiency of the DEIS presents a conflict of interest and offers insufficient justification for the recorded claim. BLM needs to provide a robust scientific analysis of the proposed road mortality mitigation measures that demonstrates how and why they will "sufficiently mitigate mortality risk to caribou."	Text of Appendix E has been edited and citation provided.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
351.	Brook	Brisson	Trustees for Alaska	98271	175	Terrestrial Mammals	A third example regards the DEIS' statements about caribou displacement. It is asserted that, "[c]aribou would be displaced from areas that no longer have suitable forage, but displacement is not expected to be widespread. Caribou could still forage within the total footprint of a CPF and its associated satellite well pads, for example." ¹²⁸⁸ Again, no citations are provided. The claim that "displacement is not expected to be widespread" is surprising in light of the DEIS's recognition of displacement of caribou with calves due to development ¹²⁸⁹ and the estimated acreages of potential calving displacement that are larger than the entire area available for leasing under some alternatives. ¹²⁹⁰ As is described above, these estimates are minimums.	Text of Appendix E has been updated and citation provided.
352.	Brook	Brisson	Trustees for Alaska	98271	178	Terrestrial Mammals	The cumulative effects analysis for caribou is very brief and primarily provides background, describing what has happened in the program area in the past, but not drawing implications from it for the future ¹²⁹⁶ - which, of course, is the entire point of a cumulative effects analysis. There is no discussion of the effects of other development outside of the project area. This is surprising as cumulative effects are to be analyzed across the annual range of both the PCH and CAH. ¹²⁹⁷ Analyses of the effects of existing infrastructure on the PCH and CAH are needed to enable quantification of cumulative (i.e., added) effects of proposed development within the program area. ¹²⁹⁸	Reference to additional projects and analysis of Russell and Gunn (2019) was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
353.	Brook	Brisson	Trustees for Alaska	98271	179	Terrestrial Mammals	Furthermore, impacts of foreseeable future development within the PCH and CAH herd ranges also need to be analyzed for how they may compound potential Coastal Plain development. This is a serious omission for the CAH, as the DEIS states that "[i]nfrastructure to support development in the program area may facilitate additional development west of the program area, potentially altering the behavior and movements of CAH caribou."1299 The potential for this facilitated development and how it may affect the CAH, along with other development on State lands west of the Arctic Refuge, should be specified by BLM in the cumulative effects section.	Additional text added, but future development is speculative.
354.	Brook	Brisson	Trustees for Alaska	98271	182	Terrestrial Mammals	BLM also neglects to address any potential impacts to caribou habitat on private lands within the Refuge, even though concentrated PCH calving habitat exists there,1305 along with significant coastal insect relief habitat used by large numbers of caribou during the post-calving season. Furthermore, BLM's Hypothetical Development Scenario assumes that a CPF may occur on private land.1306 This has also been assumed in assessments by USGS.1307	Additional information on potential development on private land was added.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
355.	Brook	Brisson	Trustees for Alaska	98271	186	Terrestrial Mammals	Indeed, DEIS statements support the idea of caribou impacts in NSO areas, though the DEIS does not explicitly acknowledge this. Under each of the action alternatives, acreage of the potential PCH calving displacement area estimated by BLM is mentioned to “likely fall into the locations with NSO.” ¹³²³ This is especially evident under Alternative D, where the potential PCH calving displacement area is larger (by almost double) than the program area remaining open to surface occupancy. ¹³²⁴ By necessity much of this displacement area would have to overlap NSO areas since “[t]he amount of future construction activity is expected to be similar across action alternatives.” ¹³²⁵	Without knowing the oil field design, it is not possible to calculate buffer locations and include them in calculations of areas.
356.	Brook	Brisson	Trustees for Alaska	98271	189	Terrestrial Mammals	The evaluation of impacts under each alternative specifies the amount of acreage of calving and post-calving habitat that would be closed to surface occupancy based on the assumption that “[t]his could limit potential impacts on caribou in potentially important calving areas.” ¹³²⁹ The discussion above, however, makes clear that these acreages are not accurate representations of the unimpacted acreages across the program area. BLM needs to re-calculate unaffected acreages of calving and post-calving habitat under an assumption of development right along the NSO boundary (as would be likely to maximize the potential for directional drilling to accesses subsurface resources in NSO areas) and using a minimum 4 km displacement buffer into NSO areas. As is noted above, the 4 km buffer is a conservative estimate and BLM should also run a similar comparison using a wider displacement buffer, to show the range of possible effects on calving and post-calving caribou.	The EIS acknowledges that the 4-kilometer buffer of development may overlap with NSO or no-leasing areas, but the size of this overlap cannot be estimated without specific project proposals.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
357.	Brook	Brisson	Trustees for Alaska	98271	227	Terrestrial Mammals	Despite acknowledging this alarming population decline, the DEIS does not fully describe the affected environment relating to the muskox in a way that conveys baseline conditions essential to understanding how oil and gas leasing and activities will impact the species and its habitats.	The muskox population in Northeast Alaska has been described in documents incorporated by reference.
358.	Brook	Brisson	Trustees for Alaska	98271	231	Terrestrial Mammals	Muskox are difficult to study, given the harsh conditions of where they live. BLM must identify it is missing information on muskox and discuss why it is not obtaining that information and moving forward or the agency must obtain the information. BLM appears to rely on studies from cattle, citing the IAP. The 2012 DEIS for the NPRA IAP stated: Toxicity studies of crude-oil ingestion in cattle indicate that substantial weight loss and aspiration pneumonia leading to death are possible effects (Rowe et al. 1973). Exposure of livestock (horses and cattle) utilizing grazing lands with oil development has resulted in mortality and morbidity (Edwards 1985). Exposure could involve heavy metals, salt water, caustic chemicals, crude oil, and condensates. In cattle, this exposure has been shown to result in a wide variety of symptoms including effects on the central nervous system, cardio-pulmonary abnormalities, gastrointestinal disorders, inhalation pneumonia, and sudden death. Caribou, moose, and muskox that become oiled by contact with a spill in contaminated lakes, ponds, rivers, or coastal waters could die from toxic hydrocarbon inhalation and absorption through the skin. In addition to acute toxicity, mortality from chronic effects could occur well after a spill. ¹⁴¹⁰ If BLM believes that it can rely on information about the impact of oil spills on cattle to inform its analysis of the impacts of toxicity on muskox, the agency must explain why.	Muskox are rarely in the project area and move little making it unlikely they will be subject to oil spills.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
359.	Brook	Brisson	Trustees for Alaska	98271	238	Terrestrial Mammals	There is no further discussion of the impacts of seismic exploration on carnivores. This must be remedied.	Wolves and wolverines added to list of species potentially disturbed by seismic activities.
360.	Brook	Brisson	Trustees for Alaska	98271	239	Terrestrial Mammals	Discussion of the impacts of other industrial activities like construction, blasting, gravel mining, helicopter or airplane overflights, etc., is insufficient to support any conclusion regarding the significance of those impacts. For example, "[d]uring winter, future construction activities would affect mammals that are active all year or are denning in the area. Future summer construction activities could potentially disturb all mammal species using the area in that season. Increased disturbance could result in increased energetic costs, decreased time spent foraging, or displacement from preferred habitat." The DEIS simply fails to meaningfully assess, and all but ignores, the impacts of industrial development on carnivores	Additional discussion of carnivores was added
361.	Brook	Brisson	Trustees for Alaska	98271	240	Terrestrial Mammals	The DEIS also appears to largely ignore our scoping comments regarding the impacts of oilfield development and associated potential anthropogenic food sources on predators such as brown bears and wolves and on natural predator-prey relationships. We highlighted significant impacts to those relationships such as increased brown bear density and prey mortality near oilfields; increased hunting pressure and "defense of life or property" killings of brown bears; increased fox populations that require human intervention, including removal. ¹⁴³⁰	Text on potential for brown bear populations to increase was added.

S.3.42 Transportation

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Philip	Marshall	—	67580	2	Transportation	Appendix A, figure 3-6 shows the proposed marine barge route to supply the CP development. How wise is it that this “1200-mile course of serious marine navigation has no marine dry-dock repair capability nor any year-round, substantive USCG rescue support?	Comment Noted. Barge route transportation may increase from the leasing program as more oil and gas developments may occur as a result of the leasing program. The 1200 mile route presumes risks that may impact other resources through a myriad of direct and indirect effects. Thus, it is not essential for the decision maker, who is aware of the probability and severity of these potential impacts, to understand every mechanism to which those adverse impacts may occur.
2.	Withheld	Withheld	World Wildlife Fund	81184	16	Transportation	The BLM's draft EIS improperly limits its shipping discussion to the program area, which is much smaller than the area that will experience effects from the proposed development. While the program area encompasses the federal lands and waters of the Coastal Plain within the Arctic Refuge and includes approximately 125 miles of coastline from the Staines River to the Beaufort Lagoon, shipping activities connected with the proposed action will take place, and their impacts will be felt, along the entire 1,600-nautical mile (nm) marine barge route from Dutch Harbor to Kaktovik, Alaska. Moreover, the draft EIS includes virtually no description of the nature and extent of shipping activity. There is no clear discussion of what kinds of vessels will be used, how many vessel transits are expected, what cargo and materials they will carry, or how fast they are expected to travel. The limited information provided is scattered throughout the draft EIS, and it is misleading in suggesting that shipping traffic will be limited to two barge convoys per year. Indeed, in the absence of any road, or proposal for a	Marine vessel traffic is beyond the scope of this analysis; direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS but are analyzed for the program area generally based off the hypothetical development scenario. BLM does not have authority to regulate marine traffic outside of the Coastal Plain. However, since increases in marine vessel traffic are reasonably foreseeable, additional discussion was incorporated into the cumulative impacts analysis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	road, connecting Kaktovik and Deadhorse, it is clear that the vast majority of project supplies and materials, including bulk fuel and hazardous materials, will need to be shipped to the site. Furthermore, the absence of information regarding shipping and shipping-related impacts in the draft EIS is especially problematic because the number of vessels transiting the Arctic is increasing over time, including vessels serving oil and gas exploration areas in the Beaufort and Chukchi Seas, as well as vessels serving the military, research, tourism, mining, and other industries. The draft EIS must describe and analyze oil and gas-related shipping associated with the proposed development of the Coastal Plain in conjunction with a meaningful discussion of this larger picture of dramatically increasing shipping activities in the Arctic over the next 50 years. Such analysis cannot be postponed until future site-specific NEPA reviews because these will not capture the big picture of cumulative shipping impacts over the 50-year timeframe for the proposed action.	(see above)
3.	Peter	Stern	—	69296	63	Transportation	Page 3-226 Paragraph 1 "Under all alternatives, there would be no gravel roads constructed during the exploratory drilling phases;" Paragraph 2 "Under all alternatives, lease stipulations would limit the number of new roads to the amount necessary to support exploration and production activities." There seems to be a conflict between these paragraphs. The first says no roads during exploration, the second says limited new roads for exploration.	The analysis has been revised to clarify that new roads associated with private industry development will be for the purpose of providing access for private industry and subsistence use only. Clarification was made to 3-226.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Withheld	Withheld	—	70934	38	Transportation	Given that there is no precedent for public access onto oil leases on the North-slope, the public deserves a more thorough explanation of how roads will be managed and who will be allowed to use them and when.	The analysis has been revised to clarify that new roads associated with private industry development will be for the purpose of providing access for private industry and subsistence use only. Clarification was made to 3-226.
5.	Withheld	Withheld	World Wildlife Fund	81184	18	Transportation	Shipping-related oil and hazardous substance spills and resulting impacts are not discussed in any substantive way in the draft EIS. The apparent rationale for the general exclusion of shipping-related spills from the draft EIS analysis is buried in the marine mammal section. The narrative strongly downplays the potential likelihood, extent, and harm of any oil or hazardous substance spill. by suggesting that (1) there is a "low risk" of spilled fuel if a vessel carrying fuel were to run aground during barging, (2) a large oil spill in the Arctic marine environment is unlikely because "[t]o date," such as a spill has "not occurred," (3) spill risks will be reduced through "safeguards" specified in the required oil spill prevention and contingency plans, (4) the quantities of oil or hazardous substances likely to be released would be "relatively small," and (5) potential spills during refueling at sea would be only "small, accidental" spills. (See DEIS, vol. 1, at 3-141 to 3-142, 3-143.) This rationale is deeply flawed. While bulk fuel has historically been delivered to the North Slope by tanker truck along the haul road, bulk fuel deliveries by barge have commenced and are likely to become the preferred option in the future. The first large-scale fuel delivery by barge took place in September 2018, and it carried 2 million gallons of fuel from Valdez to Deadhorse. (See KTUU, Barge delivers historic fuel shipment to Alaska's North Slope (Sept. 6, 2018), available at	Barging is not discussed as a shipping method for crude oil. It is assumed that barges would only be utilized to provide for the shipment of supplies and modules. See Section 3.3.5 (Marine Mammals) for discussion of spill impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	https://www.ktuu.com/content/news/Barge-delivers-historic-fuel-shipment-to-North-Slope-492658221.html.) A collision, grounding, or other accident resulting in the discharge of even half the cargo of a fuel barge of this size (i.e., 1 million gallons) would be 10 times greater than BLM's own threshold for a "very large" spill, (See DEIS, vol. 1, at 3-64 (identifying spills over 100,000 gallons as "very large")), and it would constitute a major spill by any other estimation as well. Moreover, as the ice-free, open water season lengthens due to warming temperatures in the Arctic, transporting fuel by barge is likely to be viewed as a more convenient and/or cost-effective method of transporting fuel compared to the much smaller and more frequent 10,000-gallon increments that can be transported via tanker truck. Barge deliveries may even be the only feasible way of transporting fuel in support of Coastal Plain oil and gas operations because of the lack of a road between Deadhorse and Kaktovik. Furthermore, since the practice of bulk fuel barging to the Arctic is relatively new to this region, the lack of historic spills is not a viable metric or indicator of future risk, and the existence of oil spill prevention and contingency planning requirements does not eliminate the risk of a spill and does not excuse BLM from its duty to analyze and explain such risks in an EIS. Indeed, it is worth noting the upcoming 30th anniversary of the Exxon Valdez oil spill on March 24, 2019. The Exxon Valdez released 11 million gallons of oil into the pristine waters of Prince William Sound and left a ruinous legacy from which the region has never fully recovered. A spill of this magnitude in the Arctic would have similarly devastating consequences on marine and coastal ecosystems and subsistence resource	(see above)

S. Public Comments and BLM Responses (Transportation)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
6.	Withheld	Withheld	World Wildlife Fund	81184	23	Transportation	Ship Strikes: The draft EIS section on ship strikes should be completely revised. BLM's conclusion that ship strikes of whales and seals would be "unlikely" is based in large part on the assumption that vessel traffic would be traveling slowly, i.e., at less than around 10 knots. There is presently nothing in the leasing stipulations or ROPs, however, generally requiring ships to adhere to a 10-knot speed limit. The revised version needs to present a more realistic, scientifically-based analysis of the risk and impacts, including at individual and population levels, of vessel strikes based on overlap of whale habitat with shipping routes and the actual speeds at which vessels are expected to travel, both within or near the program area and along the marine barge route. Even if a speed limit is added in certain areas as a required and enforceable mitigation measure, revision of the analysis would still be needed. This is especially important given that worldwide records of ship strikes on whales show that all large whales are at risk, particularly right whales and bowhead whales, and ship strikes can significantly affect small populations of whales. Additionally, the draft EIS's reliance on the absence of records or evidence of ship strikes to conclude that strikes are unlikely is not satisfactory because ship strikes are grossly underreported.	ROP 46 has been revised. The 10 knot speed is a reasonable standard and aligns with other requirements across the North Slope. Additional restrictions will be analyzed on a project-specific basis.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Kennon	Meyer	—	94105	5	Transportation	the BLM intentionally omits from the calculation disturbances that clearly should be included. The BLM omits ice roads apparently because the BLM believes they do not involve the placement of anything permanent on the ground. Wildlife attempting to cross roads are unconcerned about the material from which the road is constructed. Rather, they are impacted by the traffic and ancillary activity associated with the road itself. The omission of ice roads is nonsensical, especially since the BLM considers such roads likely to be most used roads in the project area. ¹⁷ Ice roads are built with layers of freezing water pumped from ice-covered lakes or the ocean. Ice chips and snow are mixed with the water, creating a makeshift "asphalt." Ice roads take longer to melt than the surrounding tundra, thus remaining in place season after season. They can also impact permafrost and, if the timing of their use is not strictly regulated, can be extremely damaging to vegetation. ¹⁸	Section 1.9.1 has been revised to identify the production and support facilities that would count towards the 2,000-acre limit, which now includes gravel mines. Rationale as to why certain facilities may not be included is contained in Section S.1.2.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Harry K.	Brower Jr.	North Slope Borough	95612	11	Transportation	BLM should ensure that the Leasing Program allows for road and local infrastructure development for the community of Kaktovik. Road connectivity would benefit Kaktovik by lowering the cost of goods and also reduce development costs in the Coastal Plain. Other benefits of a road connecting Kaktovik to future oil and gas facilities include greater access for subsistence activities and increased employment opportunities for local residents. Increasing road connectivity is also consistent with the Arctic Strategic Transportation and Resources (ASTAR) project being undertaken by the Borough and Alaska Department of Natural Resources to identify, evaluate, and advance opportunities in North Slope communities through responsible infrastructure development. BLM must exempt such road and local infrastructure development from any restrictions under this program.	The analysis in the EIS has been revised to clarify that new roads associated with private industry development will be available to private industry access and subsistence use only.
9.	Harry K.	Brower Jr.	North Slope Borough	95612	50	Transportation	BLM should more fully consider the benefits provided by road development, particularly for the residents of Kaktovik to gain greater access to areas within the Coastal Plain.	The analysis in the EIS has been revised to clarify that new roads associated with private industry development will be available to private industry access and subsistence use only.

S.3.43 Unavoidable Adverse Effects

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	68965	97	Unavoidable Adverse Effects	68. Chapter 3; section 3.5, pages 3-247 to 3-248. Unavoidable Adverse Effects The list of unavoidable adverse effects provided here should either be labeled as a partial list, or the list should be expanded to represent a comprehensive summary of unavoidable adverse effects identified throughout the draft EIS, which is the approach I'd recommend as most informative to decision-makers and other interested parties.	Section 3.5 of the Draft EIS includes a summary list of unavoidable adverse effects that could occur. The section has been revised in the Final EIS to highlight that the list is a summary. The revised section now directs the reader to Section 4.9 of the 2012 Final IAP/EIS (BLM 2012) for a discussion of similar unavoidable adverse impacts that could occur.

S. Public Comments and BLM Responses (Unavoidable Adverse Effects)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	68965	98	Unavoidable Adverse Effects	69. Chapter 3; section 3.5, pages 3-247 to 3-248. Unavoidable Adverse Effects The pre-disturbance bond required for the proposed program should be calculated with careful attention to the objectives of other special designations that will be subverted by implementation of the proposed oil and gas program. The bond should include funding for activities that minimize impacts throughout program implementation, as well as typical abandonment and reclamation procedures. This means the bond should be sufficient to: *Fund a robust program of implementation and effectiveness monitoring, reporting, and ongoing adaptive management of the program to ensure that non-compliance is detected early and effective remedies are immediately implemented (see general comment (4) above). Funding needs to include salary for staff to develop and carry out the monitoring program. Funding for staff should include enforcement officers who are charged with ensuring environmental compliance with the EIS and all subsequent management, mitigation, and resource protection plans, and who are present in the field as much as possible to maximize the opportunity to coordinate with program operations staff and the potential to detect and remedy non-compliance. *Support fully the additional workload this program will impose on the BLM Authorized Official. This includes development, review, and ongoing refinement of all management, mitigation, and resource protection plans described in the draft EIS. This process is likely to require engaging technical support and input from external experts and scientific societies to ensure best available information and technology is incorporated in these plans. Calculation of funding for this activity should include consideration of	Operators would be required to submit a reclamation plan that satisfies the objectives. Bonding would be determined and required with the specific oil and gas authorization. 43 CFR 3134 (NPRA bonding requirements, intent is for BLM to apply these same requirements to the Coastal Plain)

S. Public Comments and BLM Responses (Unavoidable Adverse Effects)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	the costs associated with tapping this external expertise. *Support fully the additional workload this program will impose on regulatory agencies. This means providing funds for hiring regulatory liaisons dedicated to this program. These regulatory personnel should be fully engaged in the development of all management, mitigation, and resource protection plans, as well as the process of reviewing and approving these plans in their final form. Again, funding calculations should incorporate the need to engage technical support and input from external experts and scientific societies. *Support reclamation of any sand and gravel pit sites, pit access roads, and material stockpile sites used to provide materials for program activities.	(see above)
3.	Paige	Smith	—	83305	2	Unavoidable Adverse Effects	It is not sufficient to simply provide a laundry list of the unavoidable adverse impacts as presented in Section 3.5 without describing how these unavoidable impacts will be ameliorated/remediated. This section does not even mention the soil, surface water and groundwater contamination which will occur from inevitable spills. Cleanup of soils and groundwater in this area of shallow groundwater and ubiquitous surface water in such a fragile environment is extremely difficult (as evidenced by the contaminated site reports filed for this part of Alaska). None of this is adequately addressed in the DEIS.	Section 3.5 of the Draft EIS includes a summary list of unavoidable adverse effects that could occur. The section has been revised in the Final EIS to highlight that the list is a summary. The revised section now directs the reader to Section 4.9 of the 2012 Final IAP/EIS (BLM 2012) for a discussion of similar unavoidable adverse impacts that could occur.

S. Public Comments and BLM Responses (Unavoidable Adverse Effects)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Brook	Brisson	Trustees for Alaska	98269	93	Unavoidable Adverse Effects	BLM mentions the bonding requirements at 43 C.F.R § 3104 in the DEIS as applying to oil and gas activities on the Coastal Plain. ⁴⁹⁶ Its discussion of the subject is vague and inadequate. First, it is unclear why the DEIS references Mineral Leasing Act (MLA) regulations. Generally, the MLA does not apply to the Arctic Refuge. The Tax Act noted that BLM should manage the oil and gas program similar to how it manages leasing in the NPR-A under the NPRPA and its regulations, which include bonding requirements. BLM should clearly explain what bonding requirements apply in the Coastal Plain and why.	Operators would be required to submit a reclamation plan that satisfies the objectives. Bonding would be determined and required with the specific oil and gas authorization. 43 CFR 3134 (NPRPA bonding requirements, intent is for BLM to apply these same requirements to the Coastal Plain)
5.	Brook	Brisson	Trustees for Alaska	98269	94	Unavoidable Adverse Effects	BLM's brief mention of bonding requirements in the DEIS is insufficient to satisfy the demands of NEPA or ensure adequate financial assurances for reclamation-on which the DEIS relies heavily. BLM must clarify how the generic reclamation bonding requirements will apply to the Coastal Plain leasing program. For instance, the DEIS fails to explain whether new bonds must be filed by operators who have already satisfied the national blanket bond requirement or whether existing bonds are sufficient. The DEIS also fails to address how the various amounts secured by the current bonding regimes will be adequate to cover the likely cost of necessary reclamation measures on the Coastal Plain specifically. Crucially, the DEIS also fails to specify when in the leasing process the bonding requirements go into effect. It states that operators must be covered by a bond "before surface disturbing activity," ⁴⁹⁸ but does not elaborate. BLM should clarify that the bond must be furnished "prior to the issuance of an oil and gas lease," as required of lessees in the NPR-A. ⁴⁹⁹	Operators would be required to submit a reclamation plan that satisfies the objectives. Bonding would be determined and required with the specific oil and gas authorization. 43 CFR 3134 (NPRPA bonding requirements, intent is for BLM to apply these same requirements to the Coastal Plain)

S.3.44 Vegetation and Wetlands

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Douglas	Frugé	—	30574	6	Vegetation and Wetlands	As described in the document, dry vegetation habitat types would generally be affected more severely than wet habitats by these activities. Although these impacts in general would be low intensity and detectable up to only five years thereafter, some severe damage could persist up to at least 25 years after activities take place, and extremely severe damage could result in permanent vegetation changes. However, if 3-D seismic is pursued, as I expect it would, seismic lines would be quite concentrated, being only hundreds of feet apart, thus affecting a very high proportion of the areas where this occurs.	A new review report (Walker et al. 2019) has recently become available and information from that report could be incorporated into the text to update the interpretation of impacts to vegetation and wetlands from seismic work. Walker et al. 2019 is based on the historical research done on the 1002 seismic impacts from the 1980s with subsequent revisits. Although the opportunity for increased acreage of impacts due to 3D seismic is possible, the knowledge/lessons of how these impacts occurred originally should provide best practices and things to avoid with new exploration. The Walker report does not provide any new information.
2.	Withheld	Withheld	Denver Audubon	57090	7	Vegetation and Wetlands	The section on wetlands states that National Wetlands Inventory data indicate that at least 96% of the program area is classified as wetlands or waters of the US (EIS, 3-68). Environmental law and regulation require that filling of wetlands be avoided, minimized and, if unavoidable, mitigated. Will BLM require a mitigation plan as part of each leasing permit? If so, what would be the standards for such a mitigation plan?	While all future proposals will be fully analyzed under NEPA and mitigated as appropriate, the U.S. Army Corps of Engineers regulates the filling of wetlands under Section 404 of the Clean Water Act. Additionally, several ROPs (i.e., 21, 22, etc.) require minimization of footprint and impacts to wetlands.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Martha	Raynolds	—	67039	9	Vegetation and Wetlands	This section does not make any attempt to quantify the area expected to be impacted. It should include estimates of the total area affected, including indirect impacts, such as is found in the bird section. "indirect impacts of gravel roads and pads would affect an additional area about 7 to 8 times larger than the gravel footprint.... 17,000 acres (2,000 acres total gravel footprint plus approximately 15,000 acres within 328 feet), or about 1 percent of the program area (1,563,500 acres)." Plus 300 acres of gravel mines, plus all the area shaded under pipelines.	Section 3.3.1 has been revised to incorporate quantification of impacts.
4.	Martha	Raynolds	—	67039	10	Vegetation and Wetlands	The area impacted should also include total area impacted by seismic operations. The EIS estimates this at 900 square miles (576,000 acres). The area with high level disturbance - permanent change in vegetation type and hydrology of that area as documented by studies of the impacts of seismic exploration in the 1980s in the Arctic Refuge (and further summarized in the Seismic White Paper) - is expected to be about 5% of the total. That would be 28,800 acres of highly disturbed tundra with permanent changes in the vegetation, due to the seismic exploration alone.	Section 3.3.1 has been revised to incorporate quantification of impacts from seismic exploration among alternatives.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Withheld	Withheld	—	68965	66	Vegetation and Wetlands	35. Chapter 3; section 3.3.1, pages 3-67 to 3-75. Vegetation and Wetland Resources. Thank you for a resource analysis that has a structure consistent with the hypothetical development scenario and sufficient analytical content to allow the reader to distinguish differences among the action alternatives. The analysis for this resource, however, does not include consideration of the effects associated with the abandonment and reclamation phase of the program. Reclamation can involve use of heavy equipment, multiple re-entries to an area across an extended time line, and the scope of reclamation activities needed is likely to vary among the action alternatives. These differences should be estimated and analyzed. Given that currently the program area is largely undisturbed, and wetland structure and function are intact, I recommend describing the degree to which reclamation can be successful at restoring wetland structure and function, and the time frames associated with restoration of function in this environment.	Under all alternatives, ROP 35 specifies that restoration will be required to restore the land to its previous hydrological, vegetation, and habitat condition.
6.	Withheld	Withheld	—	68965	67	Vegetation and Wetlands	36. Chapter 3; section 3.3.1, pages 3-67 to 3-75. Vegetation and Wetland Resources. Has a wetland mitigation plan for the program been developed? If so, please include a cross reference to it in this section and include the plan on the documents page of the program's website.	Section 3.3.1 has been revised to include more description of areas where the ROPs contribute to avoidance and minimization and potential additional mitigation that may be required through the USACE wetland permit process.
7.	Peter	Stern	—	69296	11	Vegetation and Wetlands	Saying that winter roads leave little impact on the surface, ignores the fact that vegetation is seriously affected by the compression caused by the roads and doesn't get restored for many years.	The most significant impacts from ice road construction that are measurable and detectable over the long term are physical damage to above-ground plant tissue. Additional text has been added to Section 3.3.1 to clarify existing research on long term compaction effects.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Peter	Stern	—	69296	26	Vegetation and Wetlands	Page 3-75 This acknowledges that as leasing expands into development and production, the impact on vegetation will increase but there is no language as to how this will be either monitored or regulated.	Section 3.3.1 has been revised to include more description of areas where the ROPs contribute to avoidance and minimization and potential additional mitigation that may be required through the USACE wetland permit process.
9.	Peter	Stern	—	69296	94	Vegetation and Wetlands	Since fugitive gravel dust will likely affect vegetation along roads up to 328 feet either side of center, will BLM be studying this effect?	Monitoring indirect impacts within the 328-foot estimated buffer would be addressed within a mitigation plan accompanying a wetlands permit. See comment 67 for a recommended response that may address this comment as well.
10.	Withheld	Withheld	—	70042	2	Vegetation and Wetlands	The loss of target and non target organisms has not been analyzed and it should be.	Discussion is limited to specific vegetation and wetland types that are at greater risk or more vulnerable to the expected impacts. Very little data are available on the occurrence and distribution of rare and invasive plants. This broader level of analysis is suitable for a planning-level EIS. More detailed impact assessments would be conducted for an actual proposed project.
11.	Withheld	Withheld	—	70934	24	Vegetation and Wetlands	Page 3-67, White sweet clover has been documented in several river systems down-river from the Dalton Highway. It has the capacity to alter gravel bar ecology and succession. Concern about it has prompted USFW to conduct numerous studies and they are considering mitigation activities for clover that has spread from the Dalton Highway. It is reasonable to predict that roads within the Coastal Plain would transport clover seeds onto gravel bars of any river which was crossed. With warming summers this could create a situation where clover spreads quickly in watersheds where it has never been seen. Ecological effects of this are not considered in this document.	<i>Melilotus albus</i> (white sweet clover) was identified as a potential invasive based on existing documented infestations within a broad search area beyond the boundaries of the 1002 area. With the shortened EIS format the focus was on the highest risk species (<i>Hordeum jubatum</i>) as documented in Carlson et al. 2015.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Withheld	Withheld	—	70934	25	Vegetation and Wetlands	Page 3- 71 Final paragraph, Has there been a relevant study in an area which is as dry as the Arctic Refuge? Once again using NPR-A as a proxy for development in the Refuge ignores important climactic and ecological differences between the two distinct regions of Arctic Alaska.	The NPR-A study has some similar vegetation and wetland types for which parallels can reasonably be drawn.
13.	Withheld	Withheld	—	70934	26	Vegetation and Wetlands	Page 3- 72, The DEIS asserts that impacts are assumed to be the same for all alternatives. This is illogical and erroneous. More disturbance will equal more invasive plants. Alternatives with less roads, fewer acres leased and greater setbacks around river corridors will have less risk of invasive plants.	The text within the Rare and Invasive Plants section was re-written. Updates include clarifying that few data are available to (1) identify target species, (2) locate specific populations, (3) locate suitable habitats, and (4) identify specific local-scale impacts. A general discussion noting the increasing probability of spread of invasive species in alternatives with more gravel roads is warranted.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Jill	Nogi	Environmental Protection Agency	71634	32	Vegetation and Wetlands	Our review finds the information characterizing vegetation and wetlands in Section 3.3.1 to be confusing and insufficient for assessing the potential impacts to the resources in the project area. The document briefly summarizes vegetation and wetland types in the project area, drawing information from several sources, including vegetation mapping from the Alaska Center for Conservation Science, vegetation type descriptions based on the Alaska Vegetation Classification 5, and wetlands identification and classification from the National Wetlands Inventory, which we note is based on the Cowardin 6 classification system. The text discussing wetland and vegetation types found in the program area, as well as the conclusions regarding potential impacts under the alternatives, are difficult to follow due to blending of information from these three sources. Further, while the DEIS acknowledges the percentage of each type of vegetation that could be impacted, it does not discuss the relevance of the vegetation types within the ecosystem. We recommend that disclosing such information in the EIS would better inform the decision-maker as to the relative impacts of the different alternatives, and whether certain vegetation types warrant increased protection from future activity in the program area.	The Affected Environment section was clarified to describe further the specific vegetation and wetland types used as categories in the mapping products, and the ecological functions of those types.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Jill	Nogi	Environmental Protection Agency	71634	33	Vegetation and Wetlands	The DEIS states that "Relative to wetlands in temperate regions, North Slope wetlands tend to have low function for most of the hydrologic, biogeochemical, or social functions. This is because of the short, cold growing season, harsh winter conditions, remote location, low human population numbers, and the ubiquitous impermeable permafrost layer preventing groundwater flow." The statement is unsupported by any reference or data; therefore, we recommend adding the references supporting it or removing it from the document. In the absence of wetland function or condition assessment data, or attribution for the program area, we recommend that the EIS acknowledge that the program area is largely undisturbed and that wetlands generally exist in reference-standard condition.	Text describing wetland functions has been revised in Section 3.3.1.
16.	Jill	Nogi	Environmental Protection Agency	71634	34	Vegetation and Wetlands	The DEIS presents impacts to vegetation using a narrative format to describe how impacts to vegetation types vary among alternatives, including identifying the predominant vegetation and wetland types in areas proposed for leasing under each alternative, as well as discussing how proposed stipulations would protect various vegetation and wetland resources. We recommend summarizing the information presented here in a table, for the decision maker and the public to more easily understand how potential vegetation and wetland impacts differ among the alternatives.	Tables are provided in Appendix J to a reasonable level of detail given the limitations of data sources and impact footprints.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Withheld	Withheld	—	72125	42	Vegetation and Wetlands	Vegetation and Wetlands Comments (Section 3.3): The DEIS states that “[t]he quantification of potential impacts on specific vegetation and wetland types using a geographically explicit project footprint...was not possible for this EIS because no on-the-ground actions have been authorized.” This statement does not reflect addressing the NEPA requirement of taking a hard look at the effects of the proposed action and alternatives. Geospatial modeling of likely development patterns and specific vegetation wetland types is needed to support a cumulative effects analysis. Most importantly, it would be illegal to authorize on-the-ground actions without first analyzing and disclosing potential effects on the human environment. The effects analysis does not meet the requirements of 40 CFR § 1502.24. Development and seismic surveys as proposed by the DEIS alternatives would materially interfere with providing for the Arctic Refuge purposes of (1) conserving fish and wildlife populations and habitats in their natural diversity and (2) ensuring to the maximum extent practicable and in a manner consistent with the purposes of conserving fish and wildlife populations and habitats, water quality and necessary water quantity within the refuge.	The goal of the Draft EIS is to compare the potential impacts among the leasing alternatives. No engineering design data for an actual proposed project are available to provide the analysis described in this comment. Geospatial modeling of likely development patterns would involve some conjecture as no one can predict with any certainty where an actual development would be proposed.
18.	Richard	Edwards	—	74281	3	Vegetation and Wetlands	BLM's interpretation fails to acknowledge the reality that “rapid reclamation of impacted land” in arctic tundra is, in fact, a grand myth, given the unknown length of time required to recover soil health and re-establish anything close to the thermal regime provided by a native plant community-within time to avoid a cascade of even more adverse soil-hydrologic effects (thermokarst, etc.	Additional text regarding reclamation has been added to Section 3.3.1.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
19.	Richard	Edwards	—	74281	4	Vegetation and Wetlands	BLM's interpretation that unproven arctic tundra reclamation (partial gravel removal followed by revegetation efforts, typically with non-native species) gives it license to operate under a moving facility area target is entirely invalid. In Section 3.7 (Irreversible and Irrecoverable Commitments of Resources, page 3-248) we read that one such unrecoverable commitment involves: "Loss or change in vegetation and wetlands where gravel is placed, regardless of whether it is removed at abandonment."	Comment is applicable to Section 3.6. Statement is intended to highlight unavoidable losses such as permanent loss of vegetation or wetlands after placement of fill. The section is intended to account for irreversible impacts, not make the assumption that gravel removal and revegetation would offset these effects.
20.	Gallenberg	Elaine	University of Alaska Fairbanks	74287	1	Vegetation and Wetlands	As stated in section 3.3.1, at least 96% of the proposed area is designated as wetland, making it subject to special regulation under section 404 of the Clean Water Act and section 10 of River and Harbors act. In the DEIS, the method suggested for quantifying the function of these wetlands was stated as "most suitable in areas where development has already occurred (DEIS, Vol.1, pg. 3-69). I am concerned that this method will not be suitable for capturing the function of the wetlands in question	The selection of a functional assessment method would be made prior to a specific development plan. The Draft EIS merely notes the currently available and accepted methods for functional assessments in Alaska and on the North Slope.
21.	Chandra	Turner	Inuvialuit Game Council	75902	16	Vegetation and Wetlands	The term "wise use" is a term of art under the Ramsar Convention. The Parties have elaborated on its meaning in a number of ways including through the adoption of Recommendation 6.2 (1996) on Environmental Impact Assessment. This Recommendation calls on the Contracting Parties "to integrate environmental considerations in relation to wetlands into planning decisions in a clear and publicly transparent manner." ¹⁵	RAMSAR-Wise-Use of Wetlands is cited in text and added to the literature cited.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
22.	Chandra	Turner	Inuvialuit Game Council	75902	17	Vegetation and Wetlands	The DEIS indicates (at 3-67 - 3-68) that: Most of the landscape in the program area is considered to be jurisdictional wetland (USFWS 2018), and NWI data indicate that at least 96 percent of the program area is classified as wetlands or waters of the US; the 4 percent of the program area that is unmapped is also likely to consist of wetlands or waters (Table 3-16; Map 3-11, Wetlands, in Appendix A). We have read the Wetlands section of the report (section 3.3.1). It contains no references to the obligations of the United States under the Ramsar Convention and no reference to the wise use concept of the Convention.	RAMSAR-Wise-Use of Wetlands is cited in text and added to the literature cited.
23.	Janet	Jorgenson	—	81671	2	Vegetation and Wetlands	Three examples of information supplied but analysis apparently not done: 1 - In Appendix J, lists of vegetation types are given for different development alternatives but then no analysis is done. To help choose an alternative you would need more information, such as which vegetation types are most sensitive to disturbance, or most useful to differing wildlife. That information is available and should be used.	Updated the text to compare impacts as they relate to sensitivity of specific vegetation types to disturbance and wildlife habitat value.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
24.	Janet	Jorgenson	—	81671	7	Vegetation and Wetlands	In general any indicator of any type of habitat issue is listed as not quantifiable in this table. I don't believe that is true. For the example of vegetation, plant community composition and changes can be quantified with field work and/or satellite images and aerial photography. Indicators could be developed. Some sources of information to develop indicators: the EIS gives some assumptions about development footprint. The area that would be covered by 3-D seismic exploration can also be estimated, based on the draft EA for seismic and on past surveys in NPRA. There is information on vegetation changes during the production phase in Reynolds et al. (2014) and elsewhere.	Indicators of habitat change or impact severity are presented and listed as not quantifiable given the limitations of a lease-sale EIS. Certainly, changes in plant community composition can be quantified with field work and aerial imagery interpretation post-development. The question addressed in the table, however, is what quantitative indicators are possible to derive now, using existing data, for the desktop exercise of assessing impacts in the Draft EIS. This is different than assessing impacts in a general sense (e.g., after development of a project). For a proposed project, we agree that indicators could be developed and quantified (1) when an actual project with a specific project footprint is proposed, and (2) when suitable fine-scale land cover mapping based on new aerial imagery becomes available. However, there is no project proposed under this lease sale EIS; a possible project footprint was developed for the Draft EIS (to estimate the possible acreage affected), but no one can predict with any certainty where an actual project would occur. Additionally, the best available land cover mapping, as noted below in comment 40, is based on old (1981) imagery and the mapping is coarse-scale and inaccurate (at the scale needed to assess project impacts quantitatively). Agree that the area to be covered in seismic exploration work should be noted.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Janet	Jorgenson	—	81671	8	Vegetation and Wetlands	There DEIS fails to make an effort to develop ecological indicators and then use them in analysis of alternatives. For an example, if it is not allowed to put production pads on floodplains, facilities are not normally put in the wettest tundra areas, and dry tundra covers a tiny amount of the 1002 Area, then you can assume that pads will go on moist tundra vegetation types. For 2000 total acres of gravel, that will cover nearly 2000 acres of moist tundra. You could use the percentages of each moist tundra type in different potential development areas and estimate the number of acres of each that will be covered by gravel or otherwise altered. Some vegetation indicators that could be used, include: acres altered, acres buried under gravel, acres of types with higher habitat value that would be altered or buried, acres with road dust-caused changes (buffer around the hypothetical road distance for each CPU), acres with thermokarst (buffer around gravel roads and pads for each CPU).	No one can predict with any certainty where an actual project would occur following a lease sale for the Coastal Plain. Because of this, there is some conjecture involved in trying to develop and quantify ecological indicators for a hypothetical project based solely on the percentages of vegetation types within each potential development area. An actual project could end up affecting a different proportion of the existing vegetation types because engineering designs typically are made to avoid and minimize impacts to higher-value vegetation and habitat types whenever possible. Also, as noted above, the best available land cover mapping is based on old (1981) imagery and the mapping is coarse-scale and inaccurate. With coarse-scale and inaccurate land cover mapping, an impact analysis (at the local scale) cannot be made accurate.
26.	Janet	Jorgenson	—	81671	17	Vegetation and Wetlands	There are just 2 short paragraphs on seismic exploration under the environmental impacts section for vegetation and wetlands. To include the exploration phase as an integral part of the DEIS, that needs to be expanded using information from the seismic EA.	Additional text has been added.
27.	Janet	Jorgenson	—	81671	18	Vegetation and Wetlands	For DEIS page 3-71: 1 -The text should be changed to say trails are still measurably disturbed after 33 years, not just after 25 years as stated in the first paragraph under 'Exploration'. Based on 2018 field work completed and reported in Jorgenson, J. C. 2018. Tundra disturbance and recovery on winter seismic trails in the Arctic National Wildlife Refuge, monitored from 1985 to 2018. Arctic National Wildlife Refuge, U.S. Fish and Wildlife Service, Fairbanks, Alaska, US.	Edits were made to the Draft EIS.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
28.	Janet	Jorgenson	—	81671	31	Vegetation and Wetlands	Information on tundra sensitivity to disturbance for different vegetation types is lacking in the current draft of the DEIS. Different vegetation types have different sensitivity to disturbance. For example, the least sensitive to winter activities is wet graminoid tundra. Tall shrub tundra is easily damaged but recovers well, because the only tall shrubs on the tundra are willows along drainages and willows are well adapted to disturbance that removes branches, such as browsing. Sensitivity varies between summer and winter. For example, wet tundra with standing water freeze solid in winter and therefore can be driven on in winter with little damage. In contrast, on moist or dry vegetation types, the soil is not saturated. If there is insufficient snow cover, vehicles can churn up the soil because it is loose (not a frozen block of ice), tearing plant roots and leaving exposed bare soil, which absorbs heat in the following summers causing permafrost and ice wedges to thaw. So in winter it is better to drive preferentially on wet graminoid tundra. In summer, wet tundra should be avoided because summer activities on wet tundra cause high disturbance.	The current text does discuss (briefly) individual sensitivities to particular disturbances. Additional text has been added.
29.	Janet	Jorgenson	—	81671	34	Vegetation and Wetlands	Rare plants. States that rare plant species occur broadly across all vegetation types, with few exceptions. That is never true for any plant species. They all have specific habitat requirements, maybe even more than usual in the Arctic.	Edits were made to the text to accurately to clarify the assumptions driving the current statement in the Draft EIS.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	Janet	Jorgenson	—	81671	35	Vegetation and Wetlands	Pg 3-72 Invasive plants, states 'the potential impacts from introduction of invasive plants are assumed to be the same for all alternatives'. That is not true, because alternative D excludes leasing in most of the eastern part of the 1002 Area, so less area would be at risk. The federally-owned land in the eastern part of 1002 would be free of roads and vehicles that spread seeds. Seeds do not spread only on the gravel road footprint but are also carried far into the surrounding area by wind and over-surface water flow during spring thaw.	Agree. The text has been revised.
31.	Janet	Jorgenson	—	81671	37	Vegetation and Wetlands	Vegetation/landcover types are presented in section 3.3.1 ("Vegetation and wetlands" in Affected Environment chapter), Appendix J, and Map 3-10 in Appendix A. The lists of vegetation/landcover types are not consistent in the different parts of the EIS. The text in 3.3.1 and J-2 and the map show 4 vegetated types plus 3 unvegetated types. In contrast, Tables J-1 to J-7, listing vegetation types affected by various development scenarios, have 9 vegetated categories and 4 unvegetated types, which do not match the ones in the text and on the map. The latter types should nest within the former, but there is no information apparent to tell us which types are equivalent. Please use a common vegetation classification scheme throughout the EIS or clearly show how the two schemes compare.	Text modified to standardize the vegetation and wetland type names with the map data used.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Janet	Jorgenson	—	81671	38	Vegetation and Wetlands	Tables J-1 to J-7 need to be redone. Right now the vegetation types are in alphabetical order, which makes no sense. They need to be rearranged to make ecological sense. The table needs to be arranged in a hierarchy, with types nested into the other types used in the text and on the map. That would be into shrub-dominated, moist herbaceous, wet herbaceous, and other (barren, sparse and water). That's how Viereck's veg of Alaska and all vegetation classifications are done. For example, under wet herbaceous meadow would be listed 3 types: 'herbaceous (wet), herbaceous (marsh), and herbaceous (wet-marsh)'. Then on page J-2, under the heading 'wet herbaceous meadow', all 3 types would be described, with the most common one described first. Right now, that paragraph on page J-2 describes only the 2 types that cover <1% of the study area. The third type that fits in this category (herbaceous (wet)), which covers 16% of the area as mapped, is currently not described. It includes large areas of wet tundra that are not in lakes or on edges of lakes or coast. It should be described first and then the other 2 less common ones described.	Edits made to Tables J-1 through J-7 and in the text.
33.	Janet	Jorgenson	—	81671	39	Vegetation and Wetlands	Similarly, the category 'moist herbaceous meadow' includes moist tussock sedge tundra (26% of area) and 'herbaceous (mesic)', (31% of area). In the description on page J-2, the first 2 sentences describe the herbaceous (mesic), but most readers would not know that. Also, where the vegetation types are described in the text, it should give in parentheses the % of the whole 1002 area covered by each type. The alternative list of types used in tables in Appendix J are not described in the text, but should be described and also given their %s.	Edits made to Tables J-1 through J-7 and in the text. We know that the land cover in the 1002 area is completely inaccurate because when the NSSI map was being completed USFWS did not want any work done in the refuge. Because the map in this area is highly inaccurate allocating cover % for vegetation types in this document and tables would just be a place holder until new land cover can be completed.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
34.	Janet	Jorgenson	—	81671	40	Vegetation and Wetlands	Description of vegetation map in Appendix J. Page J-1 states that "The primary data source used for the program area was a moderate resolution (30-meter pixel) raster vegetation mosaic map compiled by multiple contributors including the North Slope Science Initiative, United States (US) Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS) Alaska Center for Conservation Science (ACCS), Ducks Unlimited, Inc., Spatial Solutions Inc., and Michigan Tech Research Institute (Ducks Unlimited 2013). The intent of the 2013 mapping effort was to update existing vegetation maps to more recent Landsat Thematic Mapper imagery where available." That may be true for the whole extent of the map (the entire North Slope of Alaska), but the part of the map covering the area of this EIS was derived from a Landsat-MSS image, not Landsat Thematic Mapper, which is much older (1981) and much lower resolution (60-meter pixel). This map and the others available for the 1002 Area are not good enough to use to describe the different development scenarios as done in Appendix J tables 3 - 7. They are all too old, too inaccurate, too low-resolution or all of the above. A new vegetation/landcover map of the 1002 Area is being produced on contract to DOI and may be done by sometime in 2020. The exercise of comparing impacts to tundra vegetation from different alternatives should be deferred until that map is available. Similarly, analysis of the effects of different alternatives on wetlands distribution and function could be done once a new wetlands map is completed. It is probably on a similar timeline for completion as the vegetation map.	This Leasing EIS uses best available information. Any on-the-ground activities will require additional NEPA analysis, and will use best available information at that time, or require additional baseline data.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
35.	Robin	Stebbins	—	83751	8	Vegetation and Wetlands	The acreage of various vegetation types and their occurrence in the zones of hydrocarbon potential are tabulated, but the impact of post-leasing activity are not given. For example, what fraction of the vegetation types are affected, and to what degree. GIS tools can cross-correlate the vegetation types with locations with high hydrocarbon potential. The effects of setbacks, NSOs, TLs and other restrictions can be similarly quantified to better compare the alternatives. Likewise with the other biological resources.	The impact analysis was done at a broad-scale because (1) the available land cover mapping data are not at high enough resolution or accuracy to support a detailed analysis, and (2) the generalized development scenario is not spatially explicit.
36.	Withheld	Withheld	—	90594	1	Vegetation and Wetlands	The EIS notes that "a review of Alaska's statewide invasive plant database...revealed no documented occurrences of nonnative plant species in the program area." The EIS further notes that existing occurrences in the "broader search area...were associated primarily with disturbances, such as fill importation, or extraction associated with the construction of gravel roads and pits." Given the pristine environment at hand, I question the lack of stipulations listed to ensure that non-native and invasive species are not spread by the above disturbances, as well as others. Such activities have the ability to shift the area's natural paradigm, introducing invasive plant varieties that stand to benefit from the large scale disturbances of climate change. BLM must document the extent and manner by which it will eliminate the risk of non-native plants in an area unmarred by introduced species	The specific stipulations for prevention and monitoring of non-native and invasive species are outlined in ROP 43, 2.2.5 page 2-36.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Withheld	Withheld	—	90594	2	Vegetation and Wetlands	BLM must find an indicator to assess possible plant community changes in the wetland and grassland communities. The EIS explains that "No indicator available to assess possible plant community changes," but native plant scientists and botany groups routinely use modelling to assess potential spread of non-native plants and the associated changes to communities. See attachment for example, with regards to Tamarisk spread in the contiguous United States. If a model does not currently exist for the immediate parameters (Alaskan land, climate, species communities, etc), then BLM must employ one to determine the nature and extent of the risk in a warming, disturbed area.	Text has been clarified to indicate that indicators could be developed to assess possible plant community changes but such work is outside the scope of the EIS due to lack of available modeling data for arctic Alaska.
38.	Withheld	Withheld	—	90594	3	Vegetation and Wetlands	BLM has not clearly communicated the nature and methodology of the protocols used by personnel to ensure that invasive species are not spread. Such protocols include boot and equipment cleaning guides, chemical use, and controls on food and human waste disposal. BLM must explain these methodologies and protocols in full, as without such protocols, we cannot fully appraise the risk of introduced non-native species.	The specific stipulations for prevention and monitoring of non-native and invasive species are outlined in ROP 43. Invasive species management plans would be required for site-specific proposals.
39.	Withheld	Withheld	Government of the Northwest Territories	92862	60	Vegetation and Wetlands	When describing the potential impacts on vegetation and wetlands "The anchor development footprint was buffered by 328 feet (comprising another 6,607 acres) to account for the area of indirect effects on vegetation and wetlands." There was no reference provided in the draft EIS on what this buffer, or zone of influence, of 328 feet was based on. Recommendation The GNWT recommends the BLM provide a rationale on how a buffer of 328 feet around the anchor development was established.	The 328-foot buffer was used for all biological resources and is based on the results of studies of the indirect effects of gravel roads in arctic Alaska (Walker and Everett 1987). Citations have been added to the section 3.3.1 text.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
40.	Lisa	Jodwalis	—	94072	11	Vegetation and Wetlands	Adverse impacts of ice roads on tundra vegetation. Ice melts more slowly than non-compressed areas, thus changing the species makeup;	The impacts of ice roads are discussed under "Impacts Common to All Action Alternatives (Exploration)" page 3-71.
41.	Mark	Jorgenson	—	94411	42	Vegetation and Wetlands	The potential effects in the 1002 Area, particularly the western portion, which has hillier terrain with more tussock tundra, are likely to be much worse because of the higher prevalence of tussock tundra and depressed tracks channelizing hillslope water flow. A comprehensive study of long-term impacts of ice roads is urgently needed.	Most of the ice road research cited in the Draft EIS is from the lowlands surrounding Prudhoe Bay and NPRA. Site-specific research for the Brooks Range foothills ecoregion is lacking.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
42.	Mark	Jorgenson	—	94411	46	Vegetation and Wetlands	Ice and timber pads have been used at exploratory well sites to reduce surface disturbance since the 1980s. While these pads are much less damaging than using gravel fill, they still can lead to dead vegetation because of the delayed ice melt the following summer and can lead to eventual thermokarst and surface water impoundments. At the KIC exploratory well site drilled in winters 1985 and 1986 near the 1002 Area, extensive grass seeding was undertaken to revegetated the dead tundra for five years after abandonment and the reserve pit. The reserve pit, which leached salts from the drilling waste, had extensive thermokarst with impounded surface water, and later necessitated backfilling (Figure 14). An airphoto from 2018 showed that ice-wedge degradation was well advanced across most of the site and again the backfilled reserve pit had partially collapsed and impounded surface water. At Chandler 1 southwest of Umiat in the NPRA, the exploratory well was drilled using an ice pad in winters 2008 and 2009. Satellite imagery showed that vegetation was dead in 2010, but had recovered substantially by 2016. By 2016, shallow ice-wedge degradation had occurred throughout the pad area. Because there is almost no available information about the eventual fate of sites covered by ice or insulated timber pads, there is an urgent need to conduct a comprehensive study of the long-term effects of these pads on vegetation, permafrost, and hydrology.	Updated text to include a description of multiple year ice or timber pads and the lack of available data on long term effects.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Mark	Jorgenson	—	94411	52	Vegetation and Wetlands	Cumulatively, permafrost degradation that is likely to result from seismic exploration, ice roads, exploratory well sites, cross-drainage problems along roads, and where gravel fill has been left in place or removed after abandonment will create permanent scars across a wide region. While the DEIS makes brief mention of some of these issues, there is no quantification or analysis of the impacts across varying terrain associated with the various Alternatives. Nor is there any analysis of the cumulative indirect effects of road dust and water impoundments that contributes to extensive thermokarst in the Prudhoe Bay oilfields (Raynolds et al. 2014).	A detailed, comparative analysis among specific vegetation types within each alternative was not conducted because the generalized development scenario is not site specific and the broad-scale nature of the available land cover mapping information did not warrant such a detailed assessment. The information on road dust and impoundments in Raynolds et al. (2014) is discussed in the text under construction in Section 3.3.1.
44.	Tim	Whitehouse	PEER	95601	86	Vegetation and Wetlands	Impacts to be expected from three phases of oil exploration and development, and mitigation measures for each. A) Impacts if seismic exploration is done in 1002 area using current technology (eg overland vehicle travel). B) Impacts from exploratory well phase (eg temporary well pads, ice roads, overland vehicle travel). C) Impacts from production phase (eg gravel roads and pads, infrastructure). For each, we need information on short and long term impacts likely to plants, soils, permafrost and wetlands, including information for different vegetation communities, species, soil types and soil moisture conditions and for overland travel by different types of vehicles under different snow conditions. This information is needed to manage new seismic exploration in the 1002 area and subsequent development and to design appropriate stipulations and mitigation measures.	Text has been revised. For the exploratory drilling and production phases, a detailed, comparative analysis among specific vegetation types within each alternative was not conducted because the generalized development scenario is not site specific and the broad-scale nature of the available land cover mapping information did not warrant such a detailed assessment.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Tim	Whitehouse	PEER	95601	87	Vegetation and Wetlands	What information is currently available to address the information needs for subjects? For 1 (above): Classification and description of natural vegetation, soils, permafrost and wetlands of 1002 area and of the North Slope in general: Vegetation types are determined by many factors including soil texture, moisture, age and chemistry, soil depth above permafrost, slope, snow depth in winter and climate effects of distance from the coast. Vegetation is dominated by shrubs and sedges, mainly less than 2 feet tall, with a moss ground cover. Vegetation cover is nearly 100% except on floodplains. Most of the area is classified as wetlands because permafrost is near the surface and hinders soil drainage. Thaw of soil in summer is hindered by an insulating blanket of thick layers of organic soils and moss. Less than 3 feet thaws down from the surface in summer and often only ~1 foot. Large amounts of soil ice accumulate in the near-surface permafrost (often 20 - 60% of soil volume) and ice is subject to thaw if the organic layer is damaged leading to surface subsidence. About half of the 1002 area has a honeycomb-pattern surface microtopography ("polygon tundra") caused by uneven distribution of ice in the near-surface permafrost, which shows it is prone to subsidence if disturbed. The Arctic NWR 2015 Comprehensive Conservation Plan synthesizes much of the available information on these topics	The Arctic NWR CCP is the source for much of the information presented in the Affected Environment section and in Appendix J.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Tim	Whitehouse	PEER	95601	88	Vegetation and Wetlands	Maps of natural vegetation, soils, permafrost and wetlands of 1002 area: While there is much information available for the North Slope on these topics, the tight relationships between them and their susceptibility to disturbance, there are no accurate maps of them for the 1002 area.	The land cover mapping selection considerations are presented in the Vegetation section, page 3-65, and the narrative in Appendix J1.
47.	Tim	Whitehouse	PEER	95601	89	Vegetation and Wetlands	Vegetation Maps: Two state-wide vegetation maps exist (NLCD and Landfire) but the scale of mapping and accuracy are inadequate for planning purposes. Ducks Unlimited produced a map of the North Slope on contract for the North Slope Science Initiative in ~2015, but used existing maps where available; maps from 1994 and 1984 were used for the Arctic Refuge portion. No new imagery classification was done for the 1002 area.	The land cover mapping selection considerations are presented in the Vegetation section, page 3-65, and the narrative in Appendix J1.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48.	Tim	Whitehouse	PEER	95601	97	Vegetation and Wetlands	What are key information gaps? For 1) Vegetation maps: There is a great deal of descriptive information on vegetation and its relation to physical factors but no detailed high-accuracy map exists. The 1994 map of 1002 area had a measured accuracy of 52% for 18 vegetation classes. The age and low accuracy make this map inadequate for planning of industrial operations or stipulations on vehicle routing. Soils, permafrost and wetlands maps: To date data have been collected to increase our knowledge of general landscape processes at a broad scale. These data do not meet the accuracy or resolution required to develop infrastructure or manage this remote landscape in conjunction with industrial use. No detailed high-accuracy maps exist for soils, permafrost or wetlands. Maps have been developed from limited or old data with little field validation and at scales lacking enough detail to effectively facilitate exploration, development, and restoration. More information is needed on the seasonal soil freeze/thaw and snow pack/melt cycles in the 1002 area to determine stipulations for opening and closing the tundra travel season. For 2-A) To predict and manage impacts from new seismic exploration in the 1002 area and design appropriate stipulations and mitigation measures, we need to know how impacts would be different from the substantial impacts documented in papers and reports about seismic programs conducted on the North Slope between 1984 and 2001. Current NEPA documents for seismic programs state that impacts will be negligible due to improvements in technology, much less than those documented earlier, but we have found no follow-up studies or data to be able to evaluate this. We particularly need information from current or recent exploration in hillier	The lack of suitable high-resolution land cover mapping is addressed in the text and the data selected for this EIS was the best available at the time (see the narrative in Appendix J1). There are currently efforts underway to develop a comprehensive and current land cover map for the entire 1002 area using recent aerial imagery.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
48. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	terrain since those areas are more similar to terrain in the 1002 area. For 2-B & C) Development beyond the seismic exploration stage in 1002 area would probably follow the trajectory of the Alpine Field or another newer field, rather than the older Prudhoe Bay field. We need information on the history and current status of these fields.	(see above)
49.	Tim	Whitehouse	PEER	95601	98	Vegetation and Wetlands	What studies/surveys need to be conducted to fill those information gaps? For 1) A database of geographic information for the 1002 area is needed. Layers would include: New vegetation map. Updated wetlands map Soils map with field validation at a 1:63,000 scale Map of permafrost characteristics and depth of soil active layer Topography from most recent DEM Terrain sensitivity map, modeled using the above layers Cost estimate \$1,500,000 - \$3,000,000. Field validation for vegetation, soils, permafrost and wetlands could occur at the same time. For 2-A) Studies of impacts and recovery from seismic exploration currently occurring on North Slope are needed. Do a literature search for draft or in-house documents regarding any followup done after seismic exploration conducted on the North Slope in the past 15 years. Information about exploration in hillier terrain would be most useful. Cost estimate: staff time only, but requires work by staff from multiple agencies. For 2-B & C) Summary of history and current status of Alpine oil field or other newer oil fields on North Slope. Cost estimate: staff time only, but requires work by staff from multiple agencies.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary and utilize updated information. The development of a new land cover map for the 1002 area is currently in progress and is expected to be completed in 2020.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
50.	Harry K.	Brower Jr.	North Slope Borough	95612	37	Vegetation and Wetlands	In evaluating the potential direct and indirect impacts of oil and gas leasing on vegetation and wetlands, the DEIS notes that: impacts can still be measured up to 25 years after exploration (Jorgenson et al. 2010). Seismic vibrator lines and camp train trails on the North Slope were found to be generally visible in summer vegetation for about 5 years after disturbance, and the longer-term impacts involved limited ground disturbance and round subsidence where the trail became a wetter trough (Jorgenson et al. 2003). We recommend that BLM consider more recent studies and update its analysis to reflect that ground disturbance may persist for potentially longer periods than considered in the DEIS. I I	Text has been updated to incorporate information synthesized in (Walker et al. 2019).
51.	Harry K.	Brower Jr.	North Slope Borough	95612	58	Vegetation and Wetlands	3.3.1 3-71 "According to a long-term study on the effects of ice road construction and operation in the NPR-A, ice roads have a minimal effect on the vegetation, which would recover to pre-construction conditions after approximately 20 years." We request that a reference be provided for this long-term study and its conclusion of "minimal effect."	Guyer and Keating (2005) is cited within the referenced paragraph on page 3-71.
52.	Brook	Brisson	Trustees for Alaska	96981	89	Vegetation and Wetlands	The draft EIS estimates that fugitive dust, gravel spray, thermokarsting, and impoundments may affect soils and vegetation up to 328 feet from roads and pads.759 These impacts are likely to occur across a much broader area. One study from the Russian Arctic found that a more appropriate buffer is 3,280 feet, given the potential zone of impacts from windblown dust.760 A recent study on the Dalton Highway showed that significant disturbance and impacts to vegetation occurred in a 200-meter-wide corridor adjacent to the highway - double the distance BLM relies on in the draft EIS.761	The 328-foot buffer is based on the results of studies of the indirect effects of gravel roads (Dalton Highway) in arctic Alaska (Walker and Everett 1987). Additional text has been added for clarification on the selection of the indirect impacts buffer.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Brook	Brisson	Trustees for Alaska	96981	112	Vegetation and Wetlands	BLM has failed to quantify the total area of tundra, vegetation, and wetlands that is likely to be impacted by the oil and gas program. The vegetation and wetlands section of the draft EIS points to a hypothetical oil field scenario, consisting of a central processing facility, 8-mile roads connected to six satellite drill pads, a seawater treatment plant, and a 30-mile access road, which total an estimated 750 acres. ⁸⁰⁰ In the draft EIS, BLM states that it was not possible for the agency to quantify the potential impacts on specific wetland and vegetation types using a specific footprint because no on-the-ground actions have been authorized. ⁸⁰¹ Instead, BLM calculates the proportions of each vegetation and wetland type occurring in each lease stipulation category and high-carbon potential zone. ⁸⁰²	The impact analysis was done at a broad-scale because (1) the available land cover mapping data are not at high enough resolution or accuracy to support a detailed analysis, and (2) the generalized development scenario is not spatially explicit as the commenter has noted.
54.	Brook	Brisson	Trustees for Alaska	96981	113	Vegetation and Wetlands	BLM's analysis never takes the required step of actually discussing how the differences in vegetation might play out in terms of impacts - what, for instance, the landscape will look like if intensive seismic surveying is conducted in vegetation types like tussock tundra and riparian shrublands that are particularly prone to vehicular impacts, or in moist sedge tundra, where recovery is especially poor. ⁸⁰⁴ If snow cover is inadequate and tussock tundra is damaged, it cannot recover in a human-significant timeframe.	Impacts Common to All Action Alternatives, in Section 3.3.1, discusses the range of expected impacts, expected severity for specific vegetation types, and predicted recovery times.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
55.	Brook	Brisson	Trustees for Alaska	96981	114	Vegetation and Wetlands	BLM also needs to better quantify the potential indirect impacts. As noted throughout these comments, the footprint of development extends well beyond the limited 2,000-acre area where BLM allows placement of fill. BLM should include estimates of the total area that will be impacted by any activities, including indirect impacts. These impacts include nearby areas that could be impacted by dust, oil spills, and other contaminants or that could be altered due to other changes, such as impacts to hydrology that lead to changes in vegetation. BLM has not accounted for impacts to vegetation from pipelines, which will shade significant areas and potentially alter or kill vegetation.	The zone of indirect impacts was estimated to be within a 328-foot buffer surrounding the gravel footprint associated with the 750-acre anchor development as described on page 3-71. Each anchor development was estimated to be associated with an additional 6,607 acres potentially affected by indirect impacts.
56.	Brook	Brisson	Trustees for Alaska	96981	115	Vegetation and Wetlands	BLM assumed there was a 328-foot buffer to account for the area of indirect effects on vegetation and wetlands. ⁸⁰⁵ BLM's buffer and consideration of indirect effects is far too small. There are significant impacts from fugitive dust, gravel spray, thermokarsting and thermoerosion, and impoundments. Some of these could extend well beyond just this 328-foot buffer. As noted above, the study of the Dalton Highway that BLM cites when setting the 328foot buffer indicates that there were significant disturbances and impacts to vegetation that occurred across an area roughly twice that size. ⁸⁰⁶	Buffer widths were determined through coordination with cooperating agencies, government-to-government and ANCSA consultation, as well as recommendations from agency subject matter experts to protect the wide range of resources within those areas. The widths vary among the alternatives to facilitate analysis of the different management options.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
57.	Brook	Brisson	Trustees for Alaska	96981	116	Vegetation and Wetlands	BLM needs to analyze the full range of direct, indirect, and cumulative impacts that could occur to vegetation, tundra, and wetlands, including impacts from pre-leasing seismic activities, which the agency recognizes as a part of this project.808 BLM failed to recognize or discuss the serious impacts that are likely to occur from SAE's exploration's current seismic proposal or other pre-leasing seismic activities, despite the fact that SAE's proposal is directly related to and intended to inform the lease sale program. The EIS estimates that seismic impacts will be limited to only 900 square miles, but that fails to account for SAE's plan, which could propose approximately 37,800 miles of seismic lines, with direct impacts to 150,000 acres.809 In a White Paper analysis by prominent scientists with deep expertise and research experience in the Arctic in a range of disciplines, they concluded that SAE's proposal was likely to cause "significant, extensive, and long-lasting direct, indirect, and cumulative impacts . . . to the microtopography, hydrology, permafrost, and vegetation of the 1002 Area."810 That White Paper discusses a broad range of potential impacts to vegetation and hydrology from SAE's proposal and from seismic activities in general that BLM needs to analyze in relation to all leasing-related seismic surveying. It concludes that 3D-seismic technology has not improved to the point where there would not be significant damage to arctic tundra. Seismic activities cause compression of the tundra vegetation, which in turn causes changes to snow accumulation, hydrology, and thermal regimes, which are visible from the air and can lead to thermokarst and thermoerosion.	Incorporated the recently released UAF white paper on seismic impacts (Walker et al. 2019).

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
58.	Brook	Brisson	Trustees for Alaska	96981	117	Vegetation and Wetlands	The draft EIS notes that long-term studies have shown that the overall impact of seismic vehicle traffic on tundra is low, but impacts can still be measured up to 25 years after exploration.⁸¹³ The EIS also states that seismic lines and camp trails on the North Slope were found to be generally visible in summer vegetation for about 5 years after disturbance, and that longer-term impacts involved limited ground disturbance and ground subsidence where the trail became a wetter trough.⁸¹⁴ This high-level and generalized summary does not reflect the full range of long-term impacts likely to occur from a seismic program as intense as that proposed by SAE or that could occur from subsequent 3-D seismic surveys. The EIS does not adequately discuss the results of the studies that were conducted on areas disturbed as part of the 1980s seismic program, which indicate there are likely to be significant, long-term impacts from future seismic surveys. There are also cumulative effects that will occur from conducting seismic surveys over areas that are still damaged from the 1980s. The seismic work that took place in the 1980s resulted in impacts that persisted for decades, some of which are still visible to this day and are expected to be permanent. There was still measurable disturbance from that program on 5% of the trails in 2009 and 3% in 2018 - 33 years after the initial disturbance.⁸¹⁵ The soil subsidence and vegetation changes that remain indicate that disturbance is likely to be present in those areas for decades to come.⁸¹⁶ Camp-move trails for seismic surveys caused some of the most damaging impacts to vegetation and tundra and took far longer to recover than many of the areas damaged by the seismic trails in the 1980s.⁸¹⁷	Incorporated the recently released UAF white paper on seismic impacts (Walker et al. 2019).

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	Brook	Brisson	Trustees for Alaska	96981	118	Vegetation and Wetlands	The draft EIS states that impacts from off-road vehicle traffic could be mitigated "somewhat" by using vehicles that involve fewer pounds per square inch and by performing seismic operations later in the winter when there is more snow cover and soils are frozen deeper. ⁸¹⁸ This fails to account for the unique terrain, vegetation (e.g., tussocks), and inconsistent snow cover in the Coastal Plain. ⁸¹⁹ The Coastal Plain has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.	Discussion under "Exploration" in Section 3.3.1 describes the differences in terrain sensitivity. ROPs (ROP) have specific timing and snow depth requirements that would provide protection to sensitive areas that may naturally have low snow cover throughout the winter.
60.	Brook	Brisson	Trustees for Alaska	96981	119	Vegetation and Wetlands	It also fails to take into consideration the level of intensity of SAE's proposed seismic program and seismic proposals in general. SAE still proposes to use many of the same vehicles and equipment that have been used in past seismic programs and that have led to vegetation and other damage. ⁸²¹ Although there have been some improvements to vehicles, the number of vehicles SAE proposes to use is more than double that of past surveys and many of the vehicles are even heavier. ⁸²² This also fails to account for the sheer intensity of SAE's proposal, which will involve dramatically more seismic lines and a much more extensive seismic program than conducted in the 1980s. Even if one assumes that only 5% of the area impacted by SAE's seismic proposal will persist for decades, that would still amount to 7,500 acres worth of severe, long-term impacts from just one seismic program. ⁸²³ Even that number, which standing alone is significant, does not take into account the potential for other seismic and oil and gas activities to cumulatively combine with the effects of SAE's current proposal.	The relative severity of seismic impacts was not assessed to be severe based on the best available information at the time of preparation of the Draft EIS. Incorporated the recently released UAF white paper on seismic impacts (Walker et al. 2019).

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Brook	Brisson	Trustees for Alaska	96981	120	Vegetation and Wetlands	BLM's analysis of the potential impacts of ice roads and related mitigation measures is insufficient. The draft EIS states that ice roads have minimal effect on vegetation, which would recover to pre-construction conditions after approximately 20 years.⁸²⁴ Ice roads can have major impacts that persist into other seasons and can severely alter hydrology, natural thermal regimes, and cause a wide variety of ecological impacts.⁸²⁵ BLM itself recognizes that recovery can take decades, inconsistent with its claim of a minimal impact. The draft EIS emphasizes that more damage from ice roads occurs in well-drained areas, including moist tundra and shrub habitats.⁸²⁶ The existing ice road study BLM relies on underscores that damage is more likely to occur in well-drained areas. That study has limited applicability to the Coastal Plain because it looked at four ice roads in the western Arctic, and recommended that, "[b]ecause of the greater impacts associated with tussock tundra uplands, future ice roads planning should concentrate on locating roads in wetland areas."⁸²⁷ The Coastal Plain is made up of 59% moist herbaceous meadow types, including herbaceous and tussock tundra.⁸²⁸ Tussock tundra is the most common vegetation type in the Coastal Plain of the Arctic Refuge and is particularly susceptible to damage because of the considerable microtopographic relief in the tussocks, which can be up to ten-inches tall.⁸²⁹ BLM fails to recognize the prevalence of the exact vegetation type that is likely to be most vulnerable to damage from ice roads and pads. A one-size-fits all approach to these vegetation types is likely to result in damage to these vulnerable areas.	The Draft EIS does address the particular susceptibility of tussock tundra to above-ground impacts of ice roads (see Exploration, page 3-71). The overall effects were not assessed as severe and the ROPs (ROP) described in Chapter 2 will help mitigate, but not eliminate, the impacts.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
62.	—	—	United States Fish and Wildlife Service	97942	214	Vegetation and Wetlands	Page 3-71: Long-term impacts (>20 years) of ice roads and snow trails are described, but there is not a similar discussion describing the short-term impacts. Impacts lasting even one or two years will have effects on wildlife and visitors, and perhaps more significant indirect impacts on soils, hydrology, etc. Short-term impacts need to be identified and addressed in the document as appropriate.	Additional text describing short-term ice and snow road effects added.
63.	—	—	United States Fish and Wildlife Service	97942	215	Vegetation and Wetlands	Page 3-65-66: Overall this section is very difficult to follow or interpret. The headings in the discussion section do not match those in the map. For example, in the text there is a section heading "Moist Herbaceous Meadow", and there is no corresponding heading in the map legend. It appears this may be the "Herbaceous (mesic; northern and western Alaska)" on the map but there is no discussion that allows the reader to understand how the text translates to figure 3-10. Appendix states the information was pulled from Boggs et al. (2016). We recommend rewriting Appendix J and Section 3.3.1 pages 3-65 and 3-66 to reflect the structure in Boggs et al. (2016) and provide descriptions in Appendix .1 of the "Fine Scale" cover classes in the original source. See the text below as an example: Herbaceous (mesic; Northern and Western Alaska) Text describing this cover class. Fine Scale cover classes Herbaceous - Dwarf Shrub Vegetation description and relevant information Leymus Vegetation description and relevant information Herbaceous Mesic Vegetation description and relevant information	The headings for vegetation types in the affected environment section were intended as broad (aggregated) categories with the discussion tying the broad categories to the specific, finer scale classes in Boggs et al. (2016). The intent was to use broad-scale vegetation classes to reduce the inaccuracy inherent in the mapping of fine-scale vegetation classes, which in Boggs et al. (2016) are based on old (1981) imagery and coarse-scale raster cells. More specific language relating the Affected Environment section to the specific mapping products used was added to the text.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
64.	—	—	United States Fish and Wildlife Service	97942	216	Vegetation and Wetlands	Page3-67 and 3-68: Recommend using 1:63,000 map to assess wetlands instead of course scale analysis. At a minimum there should be definitions included in Appendix J for each wetland class. "National Wetlands Inventory Notes to the Users for North Slope 1:63,000" information sheet has definitions and a key for map codes.	Wetland definitions for each broad-scale class were added to Appendix J, including a discussion of the fine-scale NWI wetland types that are included within each broad-scale class.
65.	—	—	United States Fish and Wildlife Service	97942	217	Vegetation and Wetlands	Page 3-39, Wetland Functions and Values: We recommend the section be removed or revised. The section makes one statement at the beginning relative to the affected environment in the first line of the first paragraph. The remainder of the section refers to mitigation and wetland functional assessments that are a part of that mitigation and not the affected environment. Any statements as to the value of functional wetlands in the context of Berkowitz et al. (2017) should be reconsidered since that reference states, "This method does not identify the importance of wetlands within a watershed, measure specific wetland functions, or determine sufficiency for mitigation on its own. This methodology can be used to inform project alternatives, assess unavoidable impacts, and aid in the determination of sufficiency for mitigation." We suggest the author rewrite this section to describe the influence wetlands currently have on the system in general or cite specific papers that evaluate Arctic wetland functions and their role in Arctic systems. This will need to be done at a very high/coarse level given there was no analysis of the finer scale National Wetland Inventory products available at the 1:63,000 mapping scale.	More detailed discussion on wetland functions commonly provided by typical Arctic wetlands was added to the text.

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Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	—	—	United States Fish and Wildlife Service	97942	218	Vegetation and Wetlands	Page 3-69, Paragraph 6: "Relative to wetlands in temperate regions, North Slope wetlands tend to have low function for most of the hydrologic, biogeochemical, or social functions." Please provide a citation for this statement. Additionally, this appears to be an inappropriate comparison as functional assessments are completed at the local scale and functional values are not comparable. If one uses the hydrogeomorphic classification (Brinson, 1993), a wetland is compared against another wetland characteristic of the same class so comparison with temperate regions would also be inappropriate.	Removed the cited statement and added the general discussion on typical Arctic functions.
67.	—	—	United States Fish and Wildlife Service	97942	219	Vegetation and Wetlands	Page 3-72, Rare and Invasive Plants: For both the impact to rare plants and the probability of introduction of invasive plants, impacts might be equal across all alternatives for the actual disturbance footprint; however, the analysis should take into account the scale of each alternative. For example, under Alternative B there may be an equal probability across the entire program area for the introduction of invasive plants and destruction of rare plants, however, under Alternative D there is an extremely low probability in the no lease sale area for the introduction or destruction of plants because there will be no disturbance in this area.	Text edits were made to clarify the assumptions used with the assessment of rare and non-native plants.
68.	—	—	United States Fish and Wildlife Service	97942	220	Vegetation and Wetlands	Page 3-72, Alternative B: "...Alternative B is herbaceous (mesic) tundra, ranging from 16.4 percent in high HCP to 39.9 percent in low HCP areas..." Maximum value is 42.5 under Medium HCP TL section of Appendix J table J-3. Please correct in the Table and text as appropriate.	Corrections incorporated as suggested.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
69.	—	—	United States Fish and Wildlife Service	97942	221	Vegetation and Wetlands	Page 3-73, Alternative B, Paragraph 4: "The NSO protections preferentially preserve wetter more vulnerable vegetation common to riparian areas ..." This statement runs contrary to "Impacts affected drier, well-drained, woody shrub vegetation types to a greater degree..." from the impacts common to all alternative section above. It is not clear where the author argued that wetter sites/riparian area were "more vulnerable". Given that riparian areas tend to be high disturbance environments, a description of those vulnerabilities should be provided. Please provide further explanation of why and, or how NSOs preferentially preserve these areas.	Text edits were made to clarify that marsh and aquatic wetlands found in riparian areas are usually higher value due to wildlife habitat preferences and are somewhat protected through the NSO stipulations on riparian areas. The well-drained woody shrub vegetation types are more vulnerable to disturbance from winter ice roads and seismic operations due to the specific structure of the vegetation community.
70.	—	—	United States Fish and Wildlife Service	97942	222	Vegetation and Wetlands	Page 3-73, Alternative B, Paragraph 5: The document states, "Because of the higher incidence of low shrub vegetation ..." but fails to provide any points of comparison. Suggest rewording to "... higher incidence of low shrub vegetation in the central and eastern portion of the project area..." or something similar.	Text updated according to recommendation
71.	—	—	United States Fish and Wildlife Service	97942	223	Vegetation and Wetlands	Page 3-73, Alternative B, Paragraph 6: "The wetter types occurring in the broad freshwater emergent class are often higher functioning wetlands but were not delineated separately in the NW1 mapping used in this analysis." Because "higher functioning" is not defined, we recommend rewording as "more productive," if that is what the author intended. Additionally, it is likely many of these habitats are delineated by using the ATTRIBUTE designation instead of the WETLAND_TY (type) in the NW1 data layer. Also see previous comment on page 3-69, paragraph 6 regarding the use of "functioning" for wetland value.	Updates to the wetland functions section made to provide context for this statement.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
72.	—	—	United States Fish and Wildlife Service	97942	224	Vegetation and Wetlands	Page 3-73, Alternative C: The source of the following statement is unclear: "...herbaceous (mesic), ranging from less than 0.1 percent to 37.4 percent of the areas open for leasing, and tussock tundra, ranging from less than 0.1 percent to 41.1 percent ...". Appendix J table J-5 has Herbaceous (mesic) values ranging from 20.9 to 56.3 and Tussock tundra ranging from 4.7 to 44.2. Please correct if the values are inaccurate or provide a citation if values are from some other data source.	The references to the data in table J5 have been corrected in the text.
73.	—	—	United States Fish and Wildlife Service	97942	225	Vegetation and Wetlands	Page 3-74, Alternative C, Paragraph 2: "The vulnerable wet tundra types in the NSO riparian areas under Alternative C are protected to a limited extent, depending on the specific design of an anchor oil field development and whether stream crossings are approved." The document will be clearer if a specific stipulation for the statement is cited given that Alternative B states, "This restriction, however, would not preserve vulnerable vegetation or wetland types because construction would be permitted outside the TL, period and would still affect vegetation and wetlands" and it does not appear that any of the stipulations in Alternative C completely prevent development.	The text has been clarified to highlight that the protection to riparian wetland types is limited to an additional approval process in advance of development, which may allow for avoidance and minimization of very high-value wetlands in the design phase.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
74.	—	—	United States Fish and Wildlife Service	97942	226	Vegetation and Wetlands	Page 3-74, Alternative C, Paragraph 3: "The NSO requirements for Alternative C effectively protect high-value estuarine wetlands (see discussion under Affected Environment and Alternative B above)." Contradicts Alternative B "Impacts Common to All Action Alternatives" would likely occur throughout the NSO/high HCP areas but to a lesser extent than in the standard terms and conditions or TL areas." Additionally, neither of these statements address what "effectively protect" means and it is not defined in the Affected Environment section. Please clarify this statement or providing specific examples of how this protection is "effective".	Additional text has been provided to clarify the specific NSO requirements in Alternative C without referring back to previous sections.
75.	—	—	United States Fish and Wildlife Service	97942	227	Vegetation and Wetlands	Page 3-74, Alternative D, Paragraphs 4-6: There are multiple references to high and low-value wetlands and habitats, however, these terms or the method with which the value was determined is not stated. Please elaborate on the methods for determining value of habitats.	Modifications to the wetland functions section were made.
76.	—	—	United States Fish and Wildlife Service	97942	228	Vegetation and Wetlands	The type descriptions on page J-2 are incomplete. Within each of the four types described, not all subtypes (e.g., those show on the tables) are described. The descriptions should include ecological information, for example 'commonly occurs of low-centered polygons', or 'with lots of permafrost features such as frost boils'. Refer to the vegetation type descriptions in the Arctic Refuge CCP for examples.	Reference to surface form features is made in the type descriptions in the main body of the text and further elaboration for specific species composition is presented in Appendix J. The text was improved by refining the type descriptions.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
77.	—	—	United States Fish and Wildlife Service	97942	229	Vegetation and Wetlands	Tables J-1 to J-7. Please consider arranging the table a hierarchy, with land cover types divided into shrub-dominated, moist herbaceous, wet herbaceous, and other (barren, sparse and water), following the style of most vegetation classification systems, including The Alaska Vegetation Classification (Viereck et al. 1992) rather than listed in alphabetical order. For example, under wet herbaceous meadow would be listed 3 types: 'herbaceous (wet), herbaceous (marsh), and herbaceous (wet-marsh)'. It is typical to list the most common land cover type first. Then on page J-2, under the heading 'wet herbaceous meadow', all 3 types would be described, with the most common one described first. Right now, that paragraph on page J-2 describes only the 2 types that cover <1% of the study area. The third type that fits in this category (herbaceous (wet)), which covers 16% of the area as mapped, is currently not described. It includes large areas of wet tundra that are not in lakes or on edges of lakes or coast. Consider describing it first, followed by the two less common types.	The tables have been re-organized according to vegetation type groups rather than alphabetically.
78.	—	—	United States Fish and Wildlife Service	97942	230	Vegetation and Wetlands	The category 'moist herbaceous meadow' includes moist tussock sedge tundra (26% of area) and 'herbaceous (mesic)', (31% of area). In the description on page .1-2, the first two sentences describe the herbaceous (mesic), but most readers would not recognize or be familiar with that. Given that the type covers almost a third of the study area, consideration of a more detailed description is warranted.	Type descriptions were split between the text and the Appendix J; the text content has been adjusted to provide more context within individual text sections.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
79.	—	—	United States Fish and Wildlife Service	97942	231	Vegetation and Wetlands	Appendix F, Section F.4.12, Vegetation Information: Information in the “Impact Indicator” is not consistent with how habitat changes are quantified for other resources throughout the DEIS. The same difficulties exist for quantifying habitat changes for migratory birds (see page F-26) and caribou, but different wording is used. Please consider quantifying habitat changes similarly, and using common language, for the different resources impacted (e.g., vegetation, birds, and caribou).	Appendix F has been revised to provide impact indicator information that is consistent with what is used in the text.
80.	—	—	United States Fish and Wildlife Service	97942	232	Vegetation and Wetlands	Tables starting on page F-19 repeatedly state “no indicator available to assess possible plant community changes.” When “no indicator available”, is stated in the DEIS, we recommend indicators be developed when practicable. For example, plant community composition can be quantified with field work.	The best available data were used to evaluate the various leasing alternatives. When no indicator is available, there were no available data or the data were insufficient to complete a comparative analysis. Changes in plant community composition can be quantified with field work and aerial imagery interpretation post-development. The question addressed in the table, however, is what quantitative indicators are possible to derive now, using existing data, for the desktop exercise of assessing impacts in the Draft EIS. This is different than assessing impacts in a general sense (e.g., after development of a project).
81.	—	—	United States Fish and Wildlife Service	97942	238	Vegetation and Wetlands	The DEIS does not adequately address the threat of aquatic invasive species (e.g., Elodea) and how the transfer of aquatic plants from other infested water bodies in the state will be prevented. Please include a description of the prevention plan and describe the planned response to an invasive species introduction.	Additional text was added to the Affected Environment and Direct and Indirect Effects of Section 3.3.1 regarding the occurrence and transmission of Elodea sp. In Alaska and on the North Slope.

S. Public Comments and BLM Responses (Vegetation and Wetlands)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
82.	—	—	United States Fish and Wildlife Service	97942	241	Vegetation and Wetlands	Page 3-67, Paragraphs 4 and 5, Nonnative and Invasive Plants: The statement “According to the ecological risk analysis conducted by Carlson et al. (2015), none of the documented species listed above are regarded as a significant ecological threat” is not accurate. Canada thistle and white sweetclover are ecosystem changers that stakeholders across the state are trying to prevent from spreading. The AKEPIC invasiveness rankings for those species are 76 and 81, respectively. A value of 70 or higher is recognized as a species of high concern that managers agree need action. The other species have rankings of 63 or less. This section also lacks any acknowledgement of species that are not yet in the Arctic or the Dalton Highway Corridor but could easily make it here. It is inaccurate to suggest that we are only concerned about the few species listed in the DEIS, and the concerns about species currently provided are downplayed. Please correct this information as appropriate.	The BLM relied on the analysis from Carlson et al. (2015), which provided a regionally specific analysis based on a variety of factors including species-specific habitat availability, species range limitations, and invasiveness rankings. That study identified <i>Hordeum jubatum</i> to be the highest risk. Additional text added describing the relative risk profiles for other species found in proximity to the 1002 area, which could become established in the area along with oil development activities.

S.3.45 Visual Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Withheld	Withheld	—	48697	1	Visual Resources	Independent work conducted by Dr. Stuart Smith found that “the visual impacts of coastal plain development would be significant and wide-ranging.”	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Martha	Raynolds	—	67039	13	Visual Resources	Visual resources section has error - "Impacts Common to All Action Alternatives: There would be no impacts on visual resources common to all action alternatives, because actions would occur in different areas according to lease stipulations." But seismic exploration, which this section previously said results in permanent trails, is not described. Seismic trails are a major impact to visual resources, in both the short term when they are very visible, and in the long term due to the linear changes in vegetation and drainage that they create. Although visual impacts decrease over the decades, seismic exploration is not a one-time activity (as mentioned above), so there are likely to be visible trails throughout the duration of the oil & gas activities in addition to the portions of the trails that are permanently visible due to altered drainage and vegetation.	The following text has been added to Impacts Common to All Action Alternatives: The BLM estimates that the entire federal Coastal Plain could be subject to a 3D seismic survey. After the first sale, operators would likely conduct a smaller scale 3D survey on their own lease block assuming that seismic information were not already available. All seismic operations would be conducted in the winter to minimize impacts on the tundra. Views of the program area would be interrupted with seismic testing vehicles, equipment, and camps. The bold colors and geometric, boxy forms of vehicles and camps would not resemble the colors and forms of the surrounding terrain and vegetation. The contrast would be starker when the surrounding landscape is white with snow. Seismic testing would use vehicle lights and other lights to illuminate work sites for visibility and safety. The intensity and amount of light would vary, depending on, for example, the light source and its orientation and the time of day and year. This would add artificial points of illumination that are nearly absent in the program area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3.	Richard	Edwards	—	74281	35	Visual Resources	How long would this visual degradation last? On page B-18, we read: "Field production can last from 1 to 50 years before abandonment (BLM 2012). In the Coastal Plain, assuming the 100,000 barrel-per-day peak production and the 8 percent decline per year, it would take an estimated 35 years after reaching peak production to get to the point of abandoning a potential field." On page 3-6, we read: "The Coastal Plain production could extend much longer than 37 years, perhaps from 50 to 100 years; 70 years is assumed for purposes of making annual GHG projections for this Leasing EIS." Basically, profound visual resource degradation of the Coastal Plain from on-site structures would last for more than a generation.	The following quoted text has been added to the existing text: Therefore, the analysis is of potential direct and indirect impacts on visual resources from on-the-ground post-lease activities "over an 85-year timeframe."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Richard	Edwards	—	74281	36	Visual Resources	More significantly, the visual degradation from a vast network of residual exploration ice road/trail/pad scars---intermingled with the even more obvious scars from gravel mine, gravel road and gravel pad "reclamation" will last for millennia. In short, the aesthetics of the Coastal Plan viewed from on-site and from the designated Wilderness to the south will be irreversibly damaged until the landscape is transformed by the next major global-scale hydro-geologic event. The Draft EIS must be revised to include more comprehensive analysis of the magnitude of the impacts of the proposed activities on visual resources, such as the analysis cited above.	Reclamation text has been revised to read as follows: Minimizing unnecessary disturbances through BMPs or mitigation is important to minimizing impacts on visual resources and, likely, other resources. This is because many impacts would persist until disturbed areas are reclaimed. Typically, the acts of conducting abandonment and reclamation take from 2 to 5 years following the termination of production (see Appendix B). This does not include returning disturbed areas to pre-disturbance conditions. The time for reclaimed sites to return to pre-disturbance conditions would take longer. Following the completion of reclamation, the reclaimed acreage would be regained against the 2,000-acre surface facility limit at any given time. This would allow for additional development of new fields as initial development is reclaimed; however, arctic vegetation does not regenerate quickly, extending the timeline for reclaiming disturbed areas, as evidenced by the time it is taking disturbances to recover from seismic testing in 1984 and 1985. Due to the time needed for disturbed areas to return to pre-disturbance conditions, surface disturbances could be visible on more than just 2,000 acres at a given time and would last beyond 85 years.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
5.	Richard	Edwards	—	74281	37	Visual Resources	The health and productivity of the active soil layer is renewable only over a long period of time, repre-senting an irreversible loss. As acknowledged in the DEIS Section 3.7 cited above, the resulting vegetation and wetland loss/change from the Hypothetical Development Scenario will also be long-term. It follows directly then that the resulting degradation of aesthetic resources will also be long-term, and therefore, irreversible. The Draft EIS must be revised to acknowledge that proposed activities will result in an irreversible loss of visual resource quality in the Coastal Plain.	Text has been added to Section 3.7: Loss of visual resource quality in the Coastal Plain
6.	Andrew	Ogden	—	75704	4	Visual Resources	Dr. Stuart Smith conducted a GIS analysis of the visual impact of development and finds that, "the visual impacts of coastal plain development would be significant and wide-ranging." For example, "oil and gas development activity across a vast majority (88%) of the 1002 Area would potentially be visible to people rafting six of its major rivers, even when structures as low as 15m are in place." Further, from high points within the federally designated Wilderness portion of the refuge, over 99% of the coastal plain and any development thereon will be visible.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

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7.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	131	Visual Resources	The DEIS inadequately considers the visual impacts of potential development in the Program Area. For example, the DEIS fails to include the visual impact of exhaust plumes from CPF facilities and gas burning heaters at well pads and fails to consider their impact. As shown in Figure 19, depending on atmospheric conditions (temperature, humidity, and inversion conditions) these plumes can raise to significant heights. Due to the topography of the Program Area these plumes can potentially be visible for miles in differing lighting conditions.	The following text has been added to the impacts discussion: Flaring and visible water vapor plumes would be visible at certain facilities. Flaring is the controlled burning of natural gas and a common practice in oil and gas exploration, production, and processing operations. A flare system consists of a flare stack and pipes that feed gas to the stack. Flare size and brightness are related to the type and amount of gas or liquids in the flare stack. Flares generate heat, noise, and light. Large flares can be quite noisy because of the volume and velocity of the gas going through the flare stack (Ohio EPA 2014). Also, visible water vapor plumes would be generated at certain facilities. The height a plume reaches would depend on a variety of factors, such as its initial velocity and ambient wind speed. Due to the relatively horizontal topography of the Coastal Plain, flaring and visible water vapor plumes can be visible for great distances and represent visible changes to the atmosphere that do not occur elsewhere in the Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
8.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	152	Visual Resources	Even under the BLM's definition of the 2,000-acre surface facility limitation, which excludes gravel mines, full development of the Coastal Plain could occur in one push, eliminating the need to wait and to retire and reclaim previously used acres for further development. This will result in extensive linear structures (roads and pipelines) visible from the horizon. By additionally pushing development onto the excluded lands around Kaktovik to end-run the cap, this is more likely. Given the topography of the Coastal Plain with rivers and ravines, structures will likely be developed along ridgelines making them more visible on the horizon. For pipelines crossing rivers and ravines, unless underground boring and tunneling is required, substantial elevated structures would be necessary making visual impacts greater. For roads crossing ravines, extensive cuts and fills would be required to maintain road grade, or a complete re-alignment would be required to re-route around the ravine. Both scenarios would increase surface disturbance and visual impact.	Added text about drills and facilities being more visible if they are on higher topography. Added text about pipelines standing out if they are on higher topography or do not follow the natural contours of the topography and instead, for example, cross rivers or ravines. Added text about roads being more prominent if they are on higher topography.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Andrew	Odgen	—	94112	1	Visual Resources	Dr. Stuart Smith conducted a GIS analysis of the visual impact of development and finds that, “the visual impacts of coastal plain development would be significant and wide-ranging.” For example, “oil and gas development activity across a vast majority (88%) of the 1002 Area would potentially be visible to people rafting six of its major rivers, even when structures as low as 15m are in place.” Further, from high points within the federally designated Wilderness portion of the refuge, over 99% of the coastal plain and any development thereon will be visible.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.
10.	Harry K.	Brower Jr.	North Slope Borough	95612	51	Visual Resources	Notably, development of Alpine appears to have negligible differences when compared to development on the Coastal Plain, the locations are within the same Borough, and there has already been some analysis associated with the project. In the mid-1990s, no “cultural modifications” in the form of gas and oil development could be seen from Nuiqsut (i.e., viewshed). By 2009, oil and gas infrastructure (including the facilities at Alpine), pipelines, and ice roads were visible from Nuiqsut and other portions of the analysis area. This change in the viewshed of Nuiqsut should be included in the analysis of potential effects to visual resources.	The following text has been added to the affected environment: In the mid-1990s, no cultural modifications in the form of oil and gas development could be seen from Nuiqsut. By 2009, oil and gas infrastructure (including the facilities at Alpine), pipelines, and ice roads were visible from Nuiqsut and other portions of that analysis area.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Francis	Mauer	—	97757	5	Visual Resources	During scoping we recommended that impacts of leasing and subsequent development on the coastal plain's visual resources and wilderness character be described and assessed. We urged that GIS enabled viewshed mapping be conducted to determine the magnitude of impacts to viewsheds. We are disappointed to learn that BLM has decided to not do such mapping at this time, but rather such analysis might be done at a later time in response to specific proposed actions. We are, however, encouraged to learn at least some of the extent of potential impacts because a citizen has completed a competent GIS analysis and submitted his report in this comment process.[9] As expected, the viewshed of impacted area is vast and covers essentially the entire coastal plain. Furthermore, Mr. Smith's mapping documents that visual impacts of oil development structures and activities will extend over a vast area of designated Wilderness to the south and east of the coastal plain. We recommend that BLM include a thorough analysis of viewshed impacts to visual resources and wilderness characteristics as part of this EIS process. Production of this information is the responsibility of BLM, and we should not have to rely on a citizen to provide it. Again, we emphasize that the American people deserve to know earlier rather than later, the extent of impacts to visual resources and thus wilderness character as well.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

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12.	Francis	Mauer	—	97757	6	Visual Resources	Throughout the DEIS we encountered many statements that while not false on surface, are nuanced in a way that can mislead readers who may be unfamiliar with arctic environments and oil field development. Here is an example: 3-205 "Where aboveground development is allowed, lease stipulations that minimize the visual contrast of new development, such as by requiring design elements that complement the predominant natural features of the characteristic landscape would reduce the intensity of visual impacts and associated change to the recreational setting." [10] Roads, pipelines, oil field infrastructure etc. are extremely foreign and incompatible with the natural landscape of the coastal plain that consists of open rolling hills and plains covered by tundra vegetation. Very little can be done to hide it short of putting the entire development underground. While the intensity of visual impacts may be slightly reduced by requiring design elements that fit into the natural features, such actions are extremely limited. The American public deserves a more accurate and realistic description of the intrusive nature of industrial facilities placed in an open tundra setting.	The following text has been added to the impacts discussion: Mitigation measures, however, would be limited and minimal.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	—	—	United States Fish and Wildlife Service	97942	244	Visual Resources	Appendix A: We recommend that maps and figures be developed as part of a computer-assisted viewshed analysis using the BLM visual resource management system. Maps and figures should model foreseeable potential effects of typical layouts by showing expected changes in viewshed form, line, color, and texture of landform, vegetation, and water from: (1) suitable river corridors (including the Kongakut River, which is outside the project area, but which was found to have a scenic ORV); (2) Kaktovik; and (3) popular recreation areas. These models should identify the distances from which vertical structures could be detected. Maps modeling areas where changes to dark skies and wildlife abundance and, or distribution are foreseeable and could also be provided.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

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14.	Brook	Brisson	Trustees for Alaska	98270	140	Visual Resources	For instance, the DEIS states that visual resources inventory and contrast ratings will be deferred to post-leasing NEPA analyses.1867 Given BLM's intent to have this EIS satisfy NEPA for purposes of the irretreivable commitment of issuing leases, the agency may not defer analysis of reasonably foreseeable aesthetic impacts associated with leasing and development activities. Nor may it segment its analysis of the significant and highly foreseeable visual impacts associated with SAEExploration's application to conduct pre-leasing 3-dimensional seismic operations. Those along with all other reasonably foreseeable direct, indirect, and cumulative visual resource impacts associated with all phases of development must be fully analyzed in the leasing EIS.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. The scope of the analysis in the EIS, analyzes all phases of an oil and gas program. All future site-specific oil and gas activities will require separate NEPA analysis. Site specific mitigation measures would be identified at that time based on project specifics.

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15.	Brook	Brisson	Trustees for Alaska	98270	142	Visual Resources	Contrary to statements in the DEIS that visual resource impacts and associated degradation of recreational settings and opportunities and wilderness characteristics may be limited due to NSO stipulations, Mr. Smith's analysis shows that those impacts are likely to be extensive, regardless of where infrastructure is ultimately located. This is due to the area's topography and narrow geography between the Brooks Range and the Beaufort Sea, bisected by several major river corridors on which most recreational visitors depend.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

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16.	Brook	Brisson	Trustees for Alaska	98270	143	Visual Resources	Nevertheless, the DEIS goes on to make a number of unsupported conclusions that NSO and other proposed measures would limit visual resource impacts, safeguard recreational settings and opportunities, and preserve wilderness character.1870 Had BLM conducted the necessary visibility analysis, it would have demonstrated the inadequacy of the proposed stipulations. For instance, it would be virtually impossible to locate derricks and towers over 30 meters tall anywhere on the Coastal Plain without having them be visible from six major recreational river corridors.1871 And to avoid viewshed impacts from those six river corridors, infrastructure of 15 meters or less in height would need to be located within a small 12% of the Coastal Plain.1872 In short, major infrastructure will be visible from the major river corridors under each of the action alternatives, impacting visual resources and recreation. This must be accurately analyzed in the EIS.	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Brook	Brisson	Trustees for Alaska	98270	144	Visual Resources	Compounding its failure to conduct a visibility analysis showing the extent of anticipated viewshed impacts, the DEIS also fails to include sufficient information to allow decision makers or the public to conceptualize the visual impacts that can be expected. The two photographs the DEIS includes as examples of what infrastructure might look like (one of a typical layout for a central processing facility with airstrip and pipeline from the Alpine CPF on State lands and one of a typical layout for an exploration well with ice pad and ice road from the Stoneyhill site in NPR-A)1876 are insufficient to depict how the unique aesthetics of the Coastal Plain are likely to be impacted by the development program being contemplated. For instance, the 2012 Point Thomson Development Project EIS conducted a visual resources analysis that superimposed visual simulations of the proposed action on photographs of key observation points at varying distances from the proposed infrastructure, at night, and from the air.1877	This proposed action is for a lease action only, which has potential indirect impacts on visual resources from post-lease activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain. Subsequent post-lease activities would require NEPA analysis before occurring. At that time, a detailed list of structures and developments would be available for a proposed activity. The BLM would identify the contrast between existing landscape conditions and proposed changes to the landscape with the aid of simulations, viewshed analyses, and artificial light at night studies, as appropriate. Site specific mitigation measures would be identified at that time based on project specifics.

S.3.46 Water Resources

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
1.	Janet	Jorgenson	—	81671	3	Water Resources	- ROP-11, First requirement: the difference between Alternatives B and C vs. Alternatives D1 and D2 is that A and B don't require 3 inches of snow water equivalent as a threshold for allowing seismic activity. After that I find no analysis in the document about what difference that would make. Where is the analysis? Just presenting information such as this is not enough. The EIS is supposed to summarize information and analyze the differences between alternatives.	The Draft EIS is designed to discuss impacts common to all alternatives and includes the changes to water quality and quantity. The discussion for each alternative includes impacts specific to that alternative as well as the regulations and stipulations that mitigate impacts. Additional text has been added to the discussion of impacts and mitigation.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
2.	Withheld	Withheld	—	72125	51	Water Resources	Ensuring Water Quality and Necessary Water Quantity in the Refuge One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This purpose recognizes the protection of water resources is central to conservation of fish and wildlife and their encompassing ecological systems and processes. This purpose establishes an explicit, but unquantified, Federal reserved water right for surface waters and groundwater in the Refuge for fish and wildlife populations and habitats. As such, surface waters and groundwater for oil and gas development and operations should not be available from within the Arctic Refuge. Alternatives B, C, D1, and D2 must be dropped from further consideration.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to discuss mitigation in the alternatives discussion.
3.	Withheld	Withheld	—	72125	41	Water Resources	Water Resources Comments (Section 3.2): The Fish and Wildlife Service describes that, “[w]ater is the lifeblood of the Arctic National Wildlife Refuge. Ensuring water quality and quantity for fish and wildlife resources is one of the purposes of the Refuge. But water quantity is limited, especially on the coastal plain - technically a very dry area. Less than five inches of precipitation falls there each year. In addition, compared to areas west, where surface water is plentiful, the coastal plain has few lakes, and they are shallow and unevenly distributed. Most of the water available in summer comes from spring snowmelt. It pools on the surface of the land, soaking the tundra. The water doesn’t percolate through the soil, as it does in most places, due to permafrost, which underlies most of the area about a foot down.” The DEIS lists many negative effects of providing for an oil and gas program for Arctic areas outside of the	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to the alternatives discussion. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
3. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Arctic Refuge, including impacts from the future development and operation of facilities such as the generation of solid waste, wastewater, produced fluids, drilling muds, and spills of oil, salt water, and hazardous substances. However, analyses and disclosure must be specific to Arctic Refuge conditions. Water quality and necessary water quantity is a controlling Arctic Refuge purpose that must be protected now and is not just a resource to be potentially restored at some point in the future. It appears that the DEIS embedded statements from a NPR-A NEPA document, which is not an analysis. Declarations such as, "[u]nder all action alternatives, no potential long-term impacts on lakes and ponds are anticipated from ice roads, ice pads, or ice bridge," must be supported by and be consistent with the analysis requirements of 40 CFR § 1502.24. Oil and gas development as described in Alternatives B, C, D1, and D2 would materially interfere with providing for the Arctic Refuge purposes of (1) conserving fish and wildlife populations and habitats in their natural diversity and (2) ensuring to the maximum extent practicable and in a manner consistent with the purposes of conserving fish and wildlife populations and habitats, water quality and necessary water quantity within the refuge. These alternatives should be dropped from further consideration.	(see above)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
4.	Mark	Jorgenson	—	94411	29	Water Resources	Existing information should be better summarized, and more detailed is needed about the frequency, thickness, distribution, and duration of the large aufeis patches that develop on many of the large rivers in the 1002 Area.	While locations of aufeis accumulations are fairly consistent and form each winter, their extent, thickness, and persistence varies with winter temperature and precipitation. Pavelsky and Zarnetske (2017) used satellite imagery to identify aufeis accumulations in Arctic Alaska and determine how their extent and persistence has changed from 2000 to 2015. Text has been added to the Affected Environment section.
5.	Mark	Jorgenson	—	94411	30	Water Resources	The recent aufeis accumulation along the Dalton Highway, that caused road closure and diversion of floodwaters should be evaluated in terms of its implication for ANWR development. A recent paper by Shur et al. (2016) concludes that the highly unusual aufeis episode most likely was caused by freezeback that blocked subsurface flow associated with the snow/ice roads used during seismic exploration in that area. This is an important topic that deserves investigation and analysis.	Shur, Y., M. Kanevskiy, D. A. Walker, M. T. Jorgenson, M. Buchhorn, M. K. Reynolds. "Permafrost-related causes and consequences of Sagavanirktok River flooding in Spring 2015," Abstract 1065. Talk presented at the 11th International Conference on Permafrost, Potsdam, Germany., 2016. Shur et al. (2016) indicates that freezeback of streambeds can result in intragravel flows rising to the surface due to severe winter temperatures, lack of snowfall, or other flow restrictions; resulting in aufeis accumulations. Other known flow restrictions include glacial moraine deposits or bedrock outcrops. Shur et al. indicates that seismic survey tracks across the Sagavanirktok delta area may have compressed snow and accelerated freezeback of the streambed, inducing aufeis growth. This information has been added to the Affected Environment section.
6.	Kaarle	Strailey	—	95670	6	Water Resources	What recent baseline data is there for stream flows and water chemistry in streams crossing the coastal plain	Additional references of baseline data for streams has been located and are incorporated in Affected Environment section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
7.	Tim	Whitehouse	PEER	95601	113	Water Resources	What studies/surveys need to be conducted to fill those information gaps? Rivers and groundwater springs (figure 2): (SEE ATTACHMENT) Figure 2. Adverse impacts of groundwater/ice withdrawals on fish, wildlife and subsistence. Near-term and medium-term (starting FY18): ? Characterize seasonality in water quantity and quality to allow for science-informed NEPA processes and development of BMPs and permitting stipulations that ensure protection of fish and wildlife habitat and account for cumulative impacts of climate change. Conduct continuous water quality and quantity monitoring on the Hulahula, Tamayariak, and Canning rivers to evaluate the current status and natural variability in late fall and spring surface water quality and quantity in relation to the timing of fish use and industrial activity (August 2018-2030: \$175,000 per year, potential leads USGS, USFWS, BLM). ? Identify the extent and value of groundwater to delineate special areas and support scienceinformed NEPA processes, BMPs, and decisions regarding hazardous waste disposal that ensure protection of fish and wildlife and habitat: ? Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS). ? Identify open-water areas and aufeis-associated fish habitat and evaluate terrestrial mammal use of aufeis, aufeis contributions to late summer flows, and the importance of aufeis and ice-dam flooding in recharging fish and wildlife habitat in the Canning, Hulahula, Itkilyariak, Katakaturak, and Sadlerochit river	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

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7. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	drainages (FY18/19 costs: \$, USFWS and USGS). Medium-term (starting FY19): seismic, development, production and restoration phases ? Evaluate efficacy of current practices and applicability to the coastal plain, 1002 area to support science-informed NEPA processes, BMPs, and restoration plans that ensure protection of fish and wildlife. Considerations must include effects on sheet flow, ice-dam flooding, and recharge of floodplains and differences between the coastal plain, 1002 area and the NPR-A. o Identify and conduct studies to minimize impacts of gravel extraction and infrastructure o Identify and conduct studies to ensure adequate restoration	(see above)
8.	Tim	Whitehouse	PEER	95601	114	Water Resources	Identify high-value and/or vulnerable lakes and characterize seasonality in water quantity and quality to allow for science-informed NEPA processes and development of BMPs and effectiveness monitoring protocols that ensure protection of fish and wildlife habitat with a known level of confidence (FY18-22 cost: \$, leads: USFWS, USGS, BLM).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9.	Tim	Whitehouse	PEER	95601	115	Water Resources	What studies/surveys need to be conducted to fill those information gaps? Rivers and groundwater springs (figure 2): (SEE ATTACHMENT) Figure 2. Adverse impacts of groundwater/ice withdrawals on fish, wildlife and subsistence. Near-term and medium-term (starting FY18): ? Characterize seasonality in water quantity and quality to allow for science-informed NEPA processes and development of BMPs and permitting stipulations that ensure protection of fish and wildlife habitat and account for cumulative impacts of climate change. Conduct continuous water quality and quantity monitoring on the Hulahula, Tamayariak, and Canning rivers to evaluate the current status and natural variability in late fall and spring surface water quality and quantity in relation to the timing of fish use and industrial activity (August 2018-2030: \$175,000 per year, potential leads USGS, USFWS, BLM). ? Identify the extent and value of groundwater to delineate special areas and support scienceinformed NEPA processes, BMPs, and decisions regarding hazardous waste disposal that ensure protection of fish and wildlife and habitat: ? Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS). ? Identify open-water areas and aufeis-associated fish habitat and evaluate terrestrial mammal use of aufeis, aufeis contributions to late summer flows, and the importance of aufeis and ice-dam flooding in recharging fish and wildlife habitat in the Canning, Hulahula, Itkilyariak,	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
9. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Katakturak, and Sadlerochit river drainages (FY18/19 costs: \$, USFWS and USGS).	(see above)
10.	Tim	Whitehouse	PEER	95601	116	Water Resources	Identify open-water areas and aufeis-associated fish habitat and evaluate terrestrial mammal use of aufeis, aufeis contributions to late summer flows, and the importance of aufeis and ice-dam flooding in recharging fish and wildlife habitat in the Canning, Hulahula, Itkilyariak, Katakturak, and Sadlerochit river drainages (FY18/19 costs: \$, USFWS and USGS)	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
11.	Tim	Whitehouse	PEER	95601	117	Water Resources	Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
12.	Tim	Whitehouse	PEER	95601	118	Water Resources	Identify the extent and value of groundwater to delineate special areas and support scienceinformed NEPA processes, BMPs, and decisions regarding hazardous waste disposal that ensure protection of fish and wildlife and habitat:	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
13.	Tim	Whitehouse	PEER	95601	119	Water Resources	Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
14.	Tim	Whitehouse	PEER	95601	120	Water Resources	Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
15.	Tim	Whitehouse	PEER	95601	121	Water Resources	Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater. (FY18-20 total cost: \$, potential leads: USGS and USFWS).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
16.	Jill	Nogi	Environmental Protection Agency	71634	26	Water Resources	Central Processing Facility Aside from a brief mention in the executive summary, the DEIS does not address the potential for wastewater discharges from a central processing facility. The action alternatives considered in the analysis include the operation of at least two, and up to four, central processing facilities. We recommend that the EIS disclose information regarding the potential wastewater discharges from these facilities, including likely contaminants of concern and the potential volume and frequency of discharges to surface waters.	Processing Facilities on the North Slope typically do not discharge to surface waters, but instead are discharged down EPA permitted UIC wells. In the event that the UIC well is "down", Oil and Gas facilities are permitted to discharge wastewater under AKG332000 with further authorizations for graywater, hydrostatic tests, stormwater, mobile spill response, and secondary containment. The permit requires treatment of the discharge to meet specific water quality criteria and does not allow degradation of the waterbody and protects the designated uses of the waterbody. However, this discharge is very infrequent.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
17.	Harry K.	Brower Jr.	North Slope Borough	95612	34	Water Resources	In addition, the DEIS states that "[s]treams on the North Slope typically freeze in September and thaw in June." ⁷ BLM should provide additional information and support for this statement. We note that there are documented instances where North Slope streams have frozen later than in typical years, and this has become more prevalent in relatively recent years	Reworded text to "Streams on the North Slope typically begin to freeze-up in September and complete the breakup process in June, although there are variations from year to year in timing due to meteorological conditions. Streams with active perennial springs may stay open longer in the fall or may develop significant aufeis accumulations which persist later in the summer." in Hydrology Section 3-52.
18.	—	—	United States Fish and Wildlife Service	97942	180	Water Resources	Page 3-51, Affected Environment: Please add "topography" to controlling forces.	Added to sentence "The climate, topography, and permafrost of the Arctic Refuge Coastal Plain...." on page 3-51.
19.	—	—	United States Fish and Wildlife Service	97942	184	Water Resources	Page 3-52, Lakes and Wetlands: Insert "due to the topography" before the statement, "lakes are very scarce..."	This statement is comparing the number of lakes (very scarce) as compared to the number in NPR-A, not a statement of the reason for the low number of lakes which can depend on a variety of factors (precipitation, geology, soil type, permafrost, topography, etc).
20.	—	—	United States Fish and Wildlife Service	97942	185	Water Resources	Page 3-53: Insert a comma in the heading between "Groundwater" and "Springs and Aufeis". Springs (groundwater) provide significant year round habitat for aquatic resources.	This heading was changed to "Groundwater, Springs, and Aufeis"

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
21.	—	—	United States Fish and Wildlife Service	97942	188	Water Resources	Page 3-54, Water Rights: Text incorrectly states, "...and over 360 Instream Reservations completed and pending under the USFWS. While the Instream Reservations have not been issued as a water rights permit, those applications would have seniority over any new applications received by ADNR." Please correct and replace the portion of the text in quotation marks with the following, "...the Service has applied for 152 Instream flow Reservations within the Refuge and project area to ensure the protection of aquatic habitats and wildlife. These reservations have been pending ADNR adjudication since 1994 and have seniority over any new application for water use."	This correction to the text was made.
22.	—	—	United States Fish and Wildlife Service	97942	189	Water Resources	Page 3-55: Edit the header of the first bullet list to include "ground water quality."	This correction to the text was made.
23.	—	—	United States Fish and Wildlife Service	97942	190	Water Resources	Page 3-55: Add the following to the list of activities that will affect the hydrology and water quality: injection/reinjection of waste, drilling muds, and other contaminants.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
24.	—	—	United States Fish and Wildlife Service	97942	194	Water Resources	Page 3-58: Under "Changes to Surface Water Quality," change to "...dust fallout from vehicle traffic could increase turbidity and contaminant loads in ponds...."	This correction was made to the text.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
25.	Greta	Burkart	—	96243	8	Water Resources	Page 3-54 states the salinity of lagoons, but no units are given, so the numbers are meaningless. There is no reference for this statement, so it is not possible to know where the information came from. This same sentence mentions the amplitude of the tides, but the authors should also note the wind-driven changes in lagoon water level, which tend to be far more important than changes in tide and will have a much greater influence on oil spill dispersion into the environment and the difficulty of cleaning up oil spills in nearshore marine areas frequented by polar bears and millions of birds.	The text has been changed to include references and units of salinity and that wind driven currents have greater influence than tidal changes.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
26.	Brook	Brisson	Trustees for Alaska	98271	30	Water Resources	Information on climate change impacts within Section 3.3.2 of the DEIS is inadequate. Current and future high-resolution climate data is currently available for the CP including upstream areas within each watershed (see Cai et al. 2018), but is not provided in the DEIS. Baseline long-term and spatially explicit information on hydrology (e.g., streamflow, water temperature, water quantity, surficial and groundwater permafrost flow dynamics) is not shown in the DEIS and therefore impossible to describe or assess the current and future impacts of climate change. Necessary information is needed to understand the baseline information of Arctic lakes, along with appropriate methodology documented by Arp et al. (2016). While Stuefer et al. (2017) provides a synthesis and analysis of observational data for three watersheds to the west of the CP it does not provide a reliable estimate of climate impacts for watersheds that flow into the CP. To understand climate change impacts on lotic ecosystems, a suite of information, models and empirical data needs to be collected to quantify thermal and streamflow regime (see Poff et al. 1997; Olden and Poff 2003; Isaak and Rieman 2013; Steel et al. 2018). No current geomorphic classification data on lotic and lentic habitats to quantify habitat types and anticipate future change (Montgomery and Buffington 1997) is documented within the DEIS, which is necessary to quantify and adequately analyze climate change impacts to aquatic ecosystems.	Additional references on climate change have been added to the climate change section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
27.	Withheld	Withheld	—	70934	21	Water Resources	Page 3-54 "climate change", This section omits data indicating that we may also see significant changes in hydrology from permafrost thaw and subsequent draining of lakes. Additionally, there is some evidence that beavers are moving north. There is abundant sign on the Kongakut. Should beavers establish themselves on the Coastal Plain they would dramatically affect water quality and hydrology.	This paragraph is re-written with additional references provided.
28.	Greta	Burkart	—	96243	77	Water Resources	F.4.10 Water Resources, Analysis Assumptions Comments In the scientific field it is widely accepted that climate change is ongoing and has widespread impacts across the North Slope of Alaska. There are numerous scientific reports on the impacts of climate change. These reports include current impacts and future projections. Climate change must be considered as a cumulative stressor if analyses are to be considered scientifically credible.	This section is re-written with additional references provided. Climate change was added as a cumulative stressor.
29.	Withheld	Withheld	—	81052	1	Water Resources	The DEIS barely touches on the ramifications from effects on the natural water with in this area. If the water table and ground water become affected because of toxins or flow reductions or Channel diversions, there has been very little said about what the effects of that would be?	Although there is some discussion throughout other sections linked to changes in groundwater, they have been added to this section for a more through discussion.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
30.	James	Warren	—	18479	5	Water Resources	If Alternative D provides the most protections for water resources, how can we then say in the next, concluding paragraph that “no other ...foreseeable future actions that could affect water resources ... would occur in the program area.” That is true only of Alternative A. The paragraph concerning Alternative D gives several setbacks, operational restrictions, prohibitions of permanent infrastructure, and unspecified protections under “Lease Stipulation 3.” But it does not give a thorough, clear assessment of the harms that would come from the Alternative D leasing plan. It does not show how water resources would be impacted. It does not support the conclusion that water resources would not be significantly impacted.	The Draft EIS is designed to discuss impacts common to all alternatives and includes the changes to water quality and quantity. The discussion for each alternative includes impacts specific to that alternative as well as the regulations and stipulations that mitigate impacts. Additional text has been added to the discussion of impacts and mitigation.
31.	Tim	Whitehouse	PEER	95601	109	Water Resources	What are key information gaps? Seismic and exploration will involve water withdrawals and temporary infrastructure. Prior to activities, the following questions need to be answered to allow for science-informed decisions: ? How effective are existing BMPs and mitigation measures used in the NPR-A at ensuring protection of habitat? Will they ensure protection of habitat in the coastal plain, 1002 area?	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
32.	Greta	Burkart	—	96243	32	Water Resources	n the "Groundwater Springs and Aufeis" section of the Affected Water Resources Environment Environment Section (paragraph 3 of page 3-53), the importance and uniqueness of springs in the Arctic Refuge are mentioned. This section, however, does not mention that these perennial springs are freshwater and are fed by deep groundwater sources. These attributes of deep groundwater springs are particularly noteworthy given that in the NPRA EIS's it is assumed that deep subsurface injections of hazardous wastes will not impact any deep freshwater resources because deep water aquifers in the NPRA are thought to be highly saline and do not emerge at the surface to create perennial freshwater springs. In the Arctic Refuge Coastal Plain, however, there is much greater potential to contaminate. Yet the potential for contamination is not mentioned in the analysis here or elsewhere. Second paragraph in the groundwater section in the ARCP EIS that states that suprapermafrost groundwater zones "have similar water quality to lakes and streams nearby (BLM 2004, Section 3.2.2.1)." This statement is not supported by the information in BLM 2004, Section 3.2.2.1. Furthermore, ongoing suprapermafrost groundwater studies in the 1002 Area indicate the chemical composition of suprapermafrost groundwater in some areas is very different than that of nearby surface water bodies. More than 60% of the second paragraph of the groundwater section has been copied directly from NPR-A 2004 EIS (BLM 2004) and should be updated to information that is more current that reflects the importance of groundwater in the Arctic Refuge Coastal Plain. The Environmental Impact Statement for Drilling in the Arctic Refuge's 1002 Area	A clarification that the springs discussed are freshwater has been added. A reference to Kane et al. (2013) and a discussion on the potential source of these springs is also added to the text. Although there may be differences in the water quality of groundwater in the NPRA versus the Arctic Refuge Coastal Plain, the fact remains that UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.

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32. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	should be taken more seriously. The contractors pulling information together for the public to review should be given adequate time to provide the public with the best available information that is relevant to the Arctic Refuge. Copying 60% of the material from an Environmental Impact Statement written for oil leasing on a different landscape that is hundreds of miles away from the Arctic Refuge's 1002 Area is unacceptable and shows disregard for the Arctic Refuge 1002 Area and the American Public who have fought tirelessly for decades to protect the amazing habitat and wildlife found in the 1002 Area.	(see above)
33.	Jill	Nogi	Environmental Protection Agency	71634	23	Water Resources	Additionally, we recommend that the EIS include a definition for sanitary/domestic wastewater. There are definitions included for blackwater and greywater, but the document also uses the terms "sanitary" and "domestic" wastewater. The EPA and the State of Alaska each have definitions for these terms, though it may be more appropriate to use the state's definitions, as the state is the wastewater permitting authority under the Clean Water Act for the Coastal Plain.	The State of Alaska definition for sanitary/domestic wastewater has been included.

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34.	Withheld	Withheld	—	68965	65	Water Resources	34. Chapter 3; section 3.2.10, page 3-61. Water Resources. After providing a good description of effects common to all action alternatives, the differential analysis for all action alternatives is completed in half a page. One key purpose of doing analyses of environmental effects under NEPA is to inform better decisions. Superficial analyses of action alternatives, such as the one provided here, do not disclose to the public and decision makers important differences that may influence their choice of a preferred alternative. Like soils, water resources are another critical component of the Coastal Plain environment that warrants more detailed analysis. Again, I recommend that details and assumptions provided in the hypothetical development scenario be used to distinguish as many differences in effects among the action alternatives as possible, especially for key resources.	This section has been re-written to provide a better comparison of impacts between the alternatives.

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35.	Tim	Whitehouse	PEER	95601	107	Water Resources	To ensure legal mandates are met during exploration and development and allow for science-informed impact assessments, NEPA processes, best management practices (BMPs), and permit stipulations the following information is necessary: ? Identification of high-value and vulnerable aquatic habitats and critical hydrologic processes by season to ensure sufficient water is available to meet refuge mandates. ? Evaluation of the efficacy, applicability and transferability of BMPs, permit stipulations and mitigation measures used in the NPR-A for use on the coastal plain, 1002 area (per National Research Council (NRC) 2003) for all phases of industrial activity (seismic, exploration, development, restoration). This evaluation must recognize and understand the implications of the stark hydrologic and topographic differences between the coastal plain, 1002 area and areas with ongoing development: o Water covers 20.2% of the developed area in NPR-A, but only 1.6% of the coastal plain, 1002 area where large expanses of land are nearly devoid of lakes (figure 1). o Most lakes in the coastal plain, 1002 area are isolated from major drainages with limited recharge and may be more vulnerable to water withdrawals. o Most flowing waters in the coastal plain, 1002 area are alluvial mountain streams. o Groundwater-fed springs are unique to the coastal plain, 1002 area and provide critical habitat for extraordinarily high concentrations of invertebrates and overwintering fish. o The relatively steep terrain and lack of water in the coastal plain, 1002 area will make it necessary to employ alternative untested practices.	Rivers and streams have been deemed biologically sensitive areas in the Draft EIS and have a series of stipulations for each alternative including no permanent oil and gas facilities, including gravel pads, roads, airports and pipelines are prohibited in the streambed and setback distances are outlined for all alternatives. These are specific to the Arctic Refuge Coastal Plain. In terms of oil and gas activities within the NPR-A, best management practices and mitigation measures have been developed to further reduce impacts. These measures would be adapted to the specific conditions in the Arctic Refuge Coastal Plain to reduce impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
36.	—	—	United States Fish and Wildlife Service	97942	179	Water Resources	Page 3-51, 3.2.10: Tiering the impacts on water resources to BLM's documents (NPR-A 2013, NPRA 2004a, BLM 2018) is inappropriate in many cases as impacts in the Arctic Refuge 1002 Area will be different due to the many differences between the 1002 Area and the developed areas in the NPR-A. For example, in the Arctic Refuge 1002 Area, water is relatively scarce, the terrain is steeper, and major groundwater-fed springs are extremely important. Recommend removing language related to the assumption of impacts where appropriate.	The terrain and topography of the Arctic Refuge Coastal Plain is steeper and more varied than where oil and gas activities have been conducted in the NPR-A. The types of oil and gas activities of the NPR-A are likely similar to the types of activities that would occur in the Arctic Refuge Coastal Plain if oil and gas were developed. The impacts of activities in the two regions would also be different due to differences in water availability, terrain, and physical features. The BMPS and stipulations that have been developed for the NPR-A as pertaining to mitigating the impacts of oil and gas activities would be used as a basis for developing appropriate mitigation measures to further protect the Arctic Refuge Coastal Plain from impacts when added to the stipulations and ROPs discussed in the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
37.	Greta	Burkart	—	96243	78	Water Resources	F.4.10 Water Resources, Analysis Assumptions Comments It cannot be assumed that impacts would be similar to those described in Greater Moose's Tooth 2 and other North Slope EIS'. The 1002 area of the Arctic Refuge is very different than developed areas of the NPR-A where the extent and volume of water is much greater and the terrain is not as steep. If the Arctic Refuge were to have the same stipulations and the NPR-A, it is expected that water withdraw would have a much greater impact as the proportion of sources tapped would be much higher in the Refuge and oil companies would use the fully permitted volume (In the NPR-A oil companies only tend to use a small fraction of the permitted volume).	The terrain and topography of the Arctic Refuge Coastal Plain is steeper and more varied than where oil and gas activities have been conducted in the NPR-A. The types of oil and gas activities of the NPR-A are likely similar to the types of activities that would occur in the Arctic Refuge Coastal Plain if oil and gas were developed. The impacts of activities in the two regions would also be different due to differences in water availability, terrain, and physical features. The BMPS and stipulations that have been developed for the NPR-A as pertaining to mitigating the impacts of oil and gas activities would be used as a basis for developing appropriate mitigation measures to further protect the Arctic Refuge Coastal Plain from impacts when added to the stipulations and ROPs discussed in the Draft EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
38.	Greta	Burkart	—	96243	85	Water Resources	These are key information gaps that need to be addressed for an adequate NEPA process that adequately addresses alternatives. These information gaps were identified by several subject matter experts from agencies including the BLM, USFWS, and USGS. Please follow CEO and other guidance to ensure these information gaps are filled prior to the EIS or indicate why they cannot be filled due to resource limitations: · How effective are existing BMPs and mitigation measures used in the NPR-A at ensuring protection of habitat? Will they ensure protection of habitat in the coastal plain, 1002 area? According to the NRC (2003), these questions have not been answered. · What habitats or areas need additional protection due to their vulnerability and/or high-value to fish, waterbirds, other wildlife, recreation, and subsistence? · What is the status and natural variability in water quality and quantity of rivers and lakes? This information is necessary to allow for impact assessments and adaptive management practices. · What BMPs, mitigation measures, and restoration standards will ensure protection of habitat from impacts of development in the coastal plain, 1002 area where there are considerable differences in hydrology, terrain, and management purposes compared to the NPR-A?	Further analysis of impacts to each Alternative has been included in the EIS. In addition, references with baseline information has also been included to further discuss impacts on water resources. The terrain and topography of the Arctic Refuge Coastal Plain is steeper and more varied than where oil and gas activities have been conducted in the NPR-A. The types of oil and gas activities of the NPR-A are likely similar to the types of activities that would occur in the Arctic Refuge Coastal Plain if oil and gas were developed. The impacts of activities in the two regions would also be different due to differences in water availability, terrain, and physical features. The BMPS and stipulations that have been developed for the NPR-A as pertaining to mitigating the impacts of oil and gas activities would be used as a basis for developing appropriate mitigation measures to further protect the Arctic Refuge Coastal Plain from impacts when added to the stipulations and ROPs discussed in the Draft EIS. Under all alternatives, ROP 35 requires restoration to the land's previous hydrological, vegetation, and habitat condition.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
39.	Greta	Burkart	—	96243	90	Water Resources	3.2.10 Water Resources Comments Tiering the impacts on water resources to BLM's documents (NPR-A 2013, NPRA 2004a, BLM 2018) is inappropriate in many cases as impacts in the Arctic Refuge 1002 Area will be different due to the many differences between the 1002 Area and the developed areas in the NPR-A. For example, in the Arctic Refuge 1002 Area, water is relatively scarce, the terrain is steeper, and major groundwater-fed springs are extremely important.	The terrain and topography of the Arctic Refuge Coastal Plain is steeper and more varied than where oil and gas activities have been conducted in the NPR-A. The types of oil and gas activities of the NPR-A are likely similar to the types of activities that would occur in the Arctic Refuge Coastal Plain if oil and gas were developed. The impacts of activities in the two regions would also be different due to differences in water availability, terrain, and physical features. The BMPS and stipulations that have been developed for the NPR-A as pertaining to mitigating the impacts of oil and gas activities would be used as a basis for developing appropriate mitigation measures to further protect the Arctic Refuge Coastal Plain from impacts when added to the stipulations and ROPs discussed in the Draft EIS.
40.	Greta	Burkart	—	96243	91	Water Resources	3.2.10 Water Resources Comments Reference to BLM 2012 4.5.4.2 is - not relevant to the 1002 area. Furthermore, 4.5.4.2 does not present an analysis or discussion, it only states that impacts are not long-term and does not provide a reference to support this. Even in the NPR-A, the long-term impacts of water withdrawal are unknown, especially for isolated lakes that may not fully recharge at snowmelt.	Further analysis of impacts to each Alternative has been included in the text of EIS. In addition, references with baseline information are also included to further discuss impacts on water resources.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
41.	Brook	Brisson	Trustees for Alaska	98271	9	Water Resources	The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on streamflow. The removal and fill of aquatic habitats will have a variety of direct impacts beyond the footprint of the development infrastructure, which may develop differently over time (i.e., days-years) causing numerous short and long-term impacts to surface waters (See Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al 2016; Walker et al. 2019). Roads, bridges, and culverts have been shown to alter surface hydrology through channelization and redistributing of flow to stream crossings (Wemple et al., 1996), which can destroy or create wetlands, alter natural streamflow regimes and impair surface waters and aquatic habitat (Trombulak et al. 2000; Cocchiglia et al. 2012).	The direct and indirect impacts section provides a discussion of the Lease Stipulations and ROPs that address these impacts.
42.	Brook	Brisson	Trustees for Alaska	98271	14	Water Resources	The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on groundwater. Habitat alteration from proposed development in the CP (roads, culverts, bridges, infrastructure pads etc.) is likely to increase permafrost thaw, thermokarsting, erosion into lentic and lotic environments and alter surficial and subsurface flow paths (Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al. 2016; Walker et al. 2019). Minimal description is provided on subsurface water movement with the CP, which is largely unknown for the CP and likely complex due to permafrost dynamics (see Woo et al. 2008; Walvoord et al 2012; Kane et al. 2013; Walvoord and Kurylk 2016). The impacts and consequences of altering groundwater are not adequately addressed in the DEIS.	The direct and indirect impacts section has been modified to include additional thermal impact references and provides a discussion of the Lease Stipulations and ROPs that address these impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
43.	Brook	Brisson	Trustees for Alaska	98271	10	Water Resources	The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on stream temperature. Industrial road crossings, and modification of aquatic habitat (removal and fill of land within floodplains) will have a variety of direct impacts beyond the described footprint, which will likely affect the instream thermal habitat of rivers and streams by altering the heat exchange processes (Caissie 2006). Due to upstream constriction effects, culverted streams are associated with altered conditions, such as increased turbidity and higher water temperature (MacPherson et al. 2012; Maitland et al. 2016), and impacts will extend hundreds of meters of each culvert (Lachance et al. 2008). Cumulatively these impacts have the potential to alter the thermal regimes across entire rivers	Further impact analysis on each alternative has been included for water resources. Stream crossings will be limited in the setback areas according to the leasing stipulations discussed in the Draft EIS, limiting the impacts.

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44.	Brook	Brisson	Trustees for Alaska	98271	11	Water Resources	The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on lentic and lotic biogeochemistry. Industrial road crossings will affect the instream physicochemical habitat of rivers and streams. Due to upstream constriction effects, culverted streams are associated with higher percent fine sediment, water temperature, water depth and turbidity, as well as lower dissolved oxygen and water velocity (MacPherson et al. 2012; Maitland et al. 2016), and sediment impacts will extend hundreds of meters downstream for each culvert (Lachance et al. 2008). Proposed development will likely affect biogeochemical processes in aquatic ecosystems, which in turn influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (Huryn et al. 2005). Additionally, research has shown that vehicle traffic has the potential to introduce heavy metals, ozone and nutrients to roadside aquatic environments (Leharne et al. 1992; Schuler and Relyea 2018), which is likely to be transported throughout aquatic systems (Gjessing et al. 1984; Schuler and Relyea 2018). The impacts and consequences of altering water biogeochemistry because of oil and gas activities are not adequately addressed in the DEIS.	Discussion of potential impacts at road crossings has been included in the changes to surface water quality section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
45.	Jill	Nogi	Environmental Protection Agency	71634	31	Water Resources	Drinking Water: The potential for impacts to drinking water are only briefly mentioned within the Water Resources chapter. We recommend that the EIS provide additional information disclosing the existing drinking water resources in the area (both surface water and groundwater sources of drinking water), including for the community of Kaktovik, and characterize the potential for impacts to the quality or quantity of those resources.	The community drinking water system for Kaktovik and the drinking water protection areas on Barter Island surrounding the community of Kaktovik have been included.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
46.	Jill	Nogi	Environmental Protection Agency	71634	24	Water Resources	APDES Permitting: We recommend that the document provide references to the existing Alaska Pollutant Discharge Elimination System permits authorized by the Alaska Department of Environmental Conservation that would regulate the discharges, protect beneficial uses of the surface waters and prevent unreasonable degradation of the marine environment. Although many operations may choose to apply for a permit to dispose of wastewater via a underground injection control well or other disposal facility, there is still the chance that the operation may have to discharge under an APDES permit. Appendices D.2.3. and D.4.2. provide an overview of ADEC's authority to regulate discharges of pollutants to surface waters of the U.S. We recommend also including a list of the existing wastewater discharge permits available. For example, DEC has APDES General Permits that provide wastewater discharge authorization to oil and gas exploration, production, and development facilities in the North Slope Borough (Permit No. AKG33-2000) and sanitary/domestic wastewater treatment facilities (AKG-57-2000 and AKG-57-3000). Facility operators can apply to DEC for authorization to discharge wastewater to surface waters of the U.S. via an existing General Permit with a Notice of Intent request for permit coverage.	The appropriate APDES permit numbers have been placed in the document.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
47.	Tim	Whitehouse	PEER	95601	112	Water Resources	During development, production and restoration phases, water use, alteration of surface and ground water hydrology and potential for contamination will increase. Prior to water withdrawals, drilling, leasing, gravel extraction, permanent infrastructure, injection of hazardous waste, and restoration the following questions need to be answered to allow for science-informed decisions: ? What BMPs, mitigation measures, and restoration standards will ensure protection of habitat from impacts of development in the coastal plain, 1002 area where there are considerable differences in hydrology, terrain, and management purposes compared to the NPR-A? ? How important are springs and associated auefs and ice-dam flooding events in supporting fish and wildlife habitat and river recharge?	Lease stipulations and ROPs are developed to minimize or eliminate adverse consequences of actions (roadway development, water withdrawal, etc.). Best management practices have developed over time in the NPR-A to further reduce the impacts of oil and gas activities. While no current practices have been developed to specifically address the Coastal Plain 1002 area, those that are in use in the NPR-A will be the first step in developing new mitigation and best practice measures appropriate for specific areas of the Coastal Plain. The direct and indirect impacts section will provide a discussion of the Lease Stipulations, and ROPs that address these impacts.
48.	Jill	Nogi	Environmental Protection Agency	71634	29	Water Resources	Flood Risks: As noted throughout the DEIS, high natural flooding during the spring break-up period is a concern throughout the proposed leasing areas. We recommend that the "Surface Water Quality" section provide additional discussion regarding how seasonal flooding is likely to impact surface water quality, including potential risks from spills during flood events. We also recommend that this section discuss the anticipated effectiveness of the various proposed lease stipulations in mitigating flood risks.	Lease Stipulations and ROPs dictate permissible locations and elevations of pads and other infrastructure. Flood concerns and impacts on surface water quality addressed by the Lease Stipulations and ROPs has been added to the water quality section.
49.	Withheld	Withheld	—	84732	1	Water Resources	Page 128 references hydrofracking. I know that the average well uses 2- 5 million gallons of water. What about the waste water which contains benzene? I saw a reference in the EIS to injection wells for the waste water. We have already in the west many instances of fracking activities which have caused toxic fracking liquid seeping into aquifers and water systems.	Fracking has been used on the North Slope since the 1980s. Any produced water from the well will likely be injected into a UIC well which is regulated by the EPA. A UIC well is thousands of feet deep and materials are injected into confined rock formations.

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50.	Grant	Barnard	—	64449	3	Water Resources	How will oil & gas exploration impact fresh water?	These are described in the section "Direct and Indirect Impacts" of 3.2.10 Water Resources.
51.	Greta	Burkart	—	96243	72	Water Resources	F.4.10 Water Resources Comments Construction and maintenance of gravel pads, roads and air access facilities can alter wetland area and extent / lead to inundation and starvation of tundra. These impacts should be listed under impact indicators.	These are discussed under "Changes in Surface Water Flow".
52.	—	—	United States Fish and Wildlife Service	97942	178	Water Resources	F-17, F.4.10: Construction and maintenance of gravel pads, roads and air access facilities can alter wetland area and extent, and can lead to inundation and starvation of tundra. Recommend these impacts be listed under impact indicators.	This is a copy of the comment above. These are discussed under "Changes in Surface Water Flow".

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
53.	Brook	Brisson	Trustees for Alaska	98271	8	Water Resources	The draft EIS also fails to specifically analyze potential impacts of "creating water reservoirs by excavating deep pools in lakes or along stream channels in conjunction with gravel removal operations," or "desalinating marine water obtained beyond the barrier islands."875 In fact, such techniques like dredging deep holes in river floodplains for water reservoirs are the opposite of "innovative," given that excavations in river floodplain gravels resulted in myriad negative impacts in the early days of the Prudhoe Bay and Kuparuk oil fields.876 Gravel mining and creation of deep water reservoirs in river floodplains could change the pathways for deep groundwater sources to perennial springs, temperatures, flooding regime, and ice formation and breakup in the rivers; change predator prey relationships and natural diversity of fish and invertebrate communities; and prevent full upstream use of riverine habitats currently utilized.877 While the draft EIS states that "[g]roundwater aquifers or local lakes and rivers are typically the preferred water sources, . . . those sources may not be sufficient to meet water needs,"878 it does not provide any quantitative analysis of water needs and availability of water sources assumed to be used nor the sites that would be impacted from other water procurement. Water withdrawals should not be permitted from any rivers or streams.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
54.	Brook	Brisson	Trustees for Alaska	96981	128	Water Resources	The draft EIS indicates that gravel mining might occur in streams and notes that it might impact stream structure.847 This should not be permitted. In addition to the fact that BLM should not allow for sand and gravel mining to occur in streams, BLM has also failed to analyze the impacts from such a destructive activity.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site specific impacts.

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55.	Greta	Burkart	—	96243	13	Water Resources	The water resources analysis section of the EIS for the 1002 Area of the Arctic refuge states that there is “potential to reclaim gravel mines into water reservoirs suitable to support fish and wildlife habitats and potential water resources for further water use needs, if the gravel mines are near waterways (BLM 2004)”. They fail to mention the watershed-scale impacts that river-connected gravel mining pits will likely have on the natural diversity of fish populations, the outcome of competition between species, and the naturally occurring nutrient, thermal, and flooding regimes that support naturally occurring populations of fish and wildlife. These impacts are not considered in the water resources or fisheries section of this EIS but would be significant at a watershed scale and last for hundreds of years beyond oil development.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site specific impacts.
56.	Greta	Burkart	—	96243	75	Water Resources	F.4.10 Water Resources Comments Impacts of gravel mining associated with the creation of deep water habitats in river floodplains include changes in the outcome of competition between species in nearby natural occurring habitats and changes in predator-prey relationships, that could impact the natural diversity of invertebrate and fish communities. There could be negative impacts to important subsistence species that rear and spawn in nearby rivers. These deep-water habitats would also change thermal regime, flooding regime, and ice phenology in nearby rivers. These impacts should be listed under type of impact and should at least be qualitatively discussed as impact indicators in the analysis.	It is not possible to have an oil and gas program without access to gravel, and it is often less impactful to obtain gravel from streambeds. For example, areas overlain with tundra may be more difficult to reclaim. All future projects would be analyzed for site specific impacts.

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57.	Jill	Nogi	Environmental Protection Agency	71634	30	Water Resources	Groundwater Impacts: We note that the discussion of potential impacts to groundwater is limited to impacts associated with future gravel mining. Elsewhere in Section 3.2.10 Water Resources, there are brief references to potential impacts to groundwater associated with water withdrawals or hydrologic impacts. For clarity, we recommend that the "Changes to Groundwater" section analyze all potential impacts to groundwater, include providing additional detail on those impacts referenced elsewhere in the section. Additional impacts not included in the DEIS include those associated with production or injection wells or resulting from leaks or spills. Due to the active groundwater/surface water interaction in the program area, as evidenced by the large number of springs, surface activities and related impacts may also have the potential to impact groundwater quality.	Text has been revised to compile all changes to groundwater resources into the section "Changes to Groundwater".
58.	—	—	United States Fish and Wildlife Service	97942	200	Water Resources	Page 3-59: In the impacts analysis section, the discussion on impacts to groundwater is limited to gravel mining impacts to subsurface flows. The potential impacts to deep groundwater flowpaths that support perennial springs are not mentioned. Deep groundwater sources and perennial springs are very important in the 1002 Area. Perennial springs have very different chemistry, thermal regimes, and ice phenology compared to other water bodies in the Refuge (See the Arctic Refuge Comprehensive Conservation Plan 2015 or papers by Alex Huryn for more information). Recommend the discussion on impacts to groundwater be expanded to include deep groundwater flowpaths and their influence on perennial springs.	"Yoshikawa, K., L. D. Hinzman, and D. L. Kane (2007), Spring and aufeis (icing) hydrology in Brooks Range, Alaska, J. Geophys. Res., 112, G04S43, doi:10.1029/2006JG000294. Yoshikawa et al. (2007) report on the source of groundwater feeding the perennial springs to be limestone formations of the Brooks Range and the springs are located at an elevation of 200-900 meters above sea level. At elevations higher than 900 meters above sea level, groundwater lacks the piezometric head to express above the ground surface while at elevations below 200 meters above sea level, thick Quaternary sediments (permafrost) act as an impermeable layer to upwelling.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
59.	Greta	Burkart	—	96243	96	Water Resources	General Comments It is important to note that contamination related to injection of hazardous wastes in subsurface areas and fracking could have major irreversible impacts to the water quantity and quality and fisheries in major spring-fed systems that are important for wildlife and subsistence users. A groundwater expert who can spend a substantial portion of time working on this EIS should conduct the impacts analysis for groundwater.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality. Further based on ground temperature data from Urban and Clow (2017) shows that the shallow groundwater is frozen. As discussed in the Draft EIS most of the groundwater exists in thaw bulbs near rivers. Therefore, the potential impacts to groundwater is limited.
60.	Brook	Brisson	Trustees for Alaska	96981	133	Water Resources	The Arctic Refuge Coastal Plain contains many springs, each of which should be described with baseline information on water quantity and quality components as well as associated fish and wildlife so that they can be adequately protected. ⁸⁶⁵ The unique Sadlerochit Springs (including Sadlerochit Spring Creek and Itkilyariak Creek) was designated as a special area, protected by regulation from any exploratory activities, including during the prior seismic surveys, ⁸⁶⁶ and recognized as important by the LEIS. ⁸⁶⁷ Sadlerochit Spring was recommended for Natural Landmark status in 1974. ⁸⁶⁸	The unique nature of these springs are discussed in the Draft EIS "Groundwater, Springs, and Aufeis" section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
61.	Brook	Brisson	Trustees for Alaska	98271	27	Water Resources	River, stream and karst-spring locations are not accurately identified, delineated or described by Section 3.3.2 of the DEIS. The current NHD stream hydrography network provides an inaccurate estimation of channel location, length and extent for CP lotic environments. Data on karst springs is limited, and new methods, including satellite imagery and empirical data collection, should be used to quantify physical and biological features of habitat (e.g., Pavelsky and Zarnetske 2017). The limited existing information on streamflow regimes is inadequate for quantifying seasonal flow regimes, and new data must be collected and methods used to quantify streamflow metrics to describe streamflow regime characteristics adequately (see Olden and Poff 2003). No information exists for stream thermal regimes, which is essential and necessary baseline information (see Steel et al. 2017). No channel reach morphology attribute information is documented to classify and quantify lotic habitat, which is essential to quantify the baseline habitat information for rivers, streams and springs and understand the response for human and natural disturbance (see Montgomery and Buffington 1997).	Figure 3-13 has all the rivers listed and gaging station locations. Quantitative data is limited and provided in Appendix H. Most thermal observations were obtained during summer periods.
62.	—	—	United States Fish and Wildlife Service	97942	182	Water Resources	Page 3-51, Affected Environment: Hydrology, freeze-up and break-up are described repeatedly, but there is little discussion of summer streamflow conditions. Streamflow diminishes after break-up. Many streams and rivers become discontinuous due to limited summer precipitation and/or distribution of channels as they cross the coastal plain. Recommend the Affected Environment be expanded to include a robust discussion of summer streamflow and hydrologic conditions.	Tables describing the mean, maximum, and minimum average daily value of discharge for several years are provided in Appendix H. This includes the Akutoktak, WF Itkilyariak, Niguanak, Sadlerochit, Sadlerochit Spring Creek, Sikrelurak, Tamayariak (plus Lower WF, Middle, and Upper WF), Canning, and Hulahula Rivers.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
63.	—	—	United States Fish and Wildlife Service	97942	183	Water Resources	Page 3-52, Watersheds, Rivers and Streams: The overview of freeze-up and break-up are of a general nature for north slope rivers and streams covering timing of annual flow, but lacks site specific knowledge of the coastal plain rivers and streams in which the topography, springs, and aflies are significant to the hydrology. For example, as the Hulahula River flows north from Fishhole 1, the single channel distributes into several braided channels. Often the flow within the braided channels goes subsurface or is intermittent. The data in table H-5 indicate that streamflow in several rivers diminishes significantly after break-up, but does not show that flow in several of the gaged rivers becomes intermittent (West Fork Tamayariak, West Fork Itkilyariak and Sikrelurak would be examples). The topography of the coastal plain and morphology of rivers and streams of the coastal plain differ from that of the NPRA. River channels distribute into many channels as the flow north from the mountains or foothills. As a result, surface flow during the summer months diminishes and may be intermittent at times or in specific locations (Table H-5). Recommend including a map that highlights the hydrology of the coastal plain.	This information has been provided as footnotes to the H-5 Tables.
64.	—	—	United States Fish and Wildlife Service	97942	187	Water Resources	Page 3-53: Add "Tamayariak and Okerokovik" to the springs identified in this section.	Text has been changed to read "The most prolific springs in the program area are the Canning, Hulahula, Sadlerochit, Itkilyariak, Katakaturak, Tamayariak, and Okerokovik Springs."

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
65.	Withheld	Withheld	—	70934	22	Water Resources	Page 3-57 This DEIS fails to characterize the hydrology of the Arctic Refuge or to distinguish it from other area on Alaska's North-Slope. The connectivity of water bodies such as smaller ponds connecting to rivers is a seasonal and ephemeral event when peak river flows and snowmelt coincide and there is extensive water over the tundra. This spring-time event keeps many lakes and ponds ecologically connected within their watershed. How will the placement of culverts, roads, airstrips etc be managed to mitigate the risk of isolating these water bodies, especially given the likelihood of culverts being full of ice during the spring? Referencing BLM 2004, Section F4.2.2.1 does not necessarily apply to this area and its unique hydrology.	Lease stipulations and ROPs are developed to minimize or eliminate adverse consequences of actions (roadway development, water withdrawal, etc.). Best management practices have developed over time in the NPR-A to further reduce the impacts of oil and gas activities. While no current practices have been developed to specifically address the Coastal Plain 1002 area, those that are in use in the NPR-A will be the first step in developing new mitigation and best practice measures appropriate for specific areas of the Coastal Plain. The direct and indirect impacts section will provide a discussion of the Lease Stipulations, and ROPs that address these impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
66.	Greta	Burkart	—	96243	7	Water Resources	* The entire third paragraph on flooding of North Slope Rivers (page 3-52), has no references and suggests that snowmelt and summer precipitation are the only causes of flooding. Again, the Arctic Refuge 1002 Area is very different than areas in the NPR-A and other North Slope areas. Compared to the developed areas in the NPRA, the 1002 Area is very close to the highest peaks in the Brooks Range (and Sadlerochit mountains), the terrain is steeper, groundwater springs and aufeis are very important hydrologic features, glaciers are an important source of river flow, and rivers a flow a relatively short distance to the coast. These factors play a very important role in flooding in the 1002 Area. The incredibly wide extent, magnitude, and natural variability in aufeis-caused flooding is evident in satellite imagery and USGS hydrology data. The importance of glacier-related flooding is evident in USGS datasets, Nolan et al 2011, etc ... These unique qualities of the Arctic Refuge will have an important influence on how the 1002 Area is impacted by oil and gas activity, whether required operating procedures in the NPRA will be effective at protecting the primary purposes of the Refuge, and how impacts may vary between different alternatives.	Additional text has been added to include glacier melt as an important contributor to streamflow and flooding.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
67.	Tim	Whitehouse	PEER	95601	122	Water Resources	Evaluate efficacy of current practices and applicability to the coastal plain, 1002 area to support science-informed NEPA processes, BMPs, and restoration plans that ensure protection of fish and wildlife. Considerations must include effects on sheet flow, ice-dam flooding, and recharge of floodplains and differences between the coastal plain, 1002 area and the NPR-A.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
68.	Tim	Whitehouse	PEER	95601	123	Water Resources	Identify and conduct studies to minimize impacts of gravel extraction and infrastructure o Identify and conduct studies to ensure adequate restoration	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
69.	Tim	Whitehouse	PEER	95601	124	Water Resources	Evaluate groundwater flow paths and recharge -- Develop a conceptual groundwater model informed by isotopic studies to delineate and age flow paths. Quantify river recharge rates to inform water withdrawal permits in areas that are primarily recharged from groundwater	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
70.	Tim	Whitehouse	PEER	95601	126	Water Resources	Identify high-value and/or vulnerable lakes and characterize seasonality in water quantity and quality to allow for science-informed NEPA processes and development of BMPs and effectiveness monitoring protocols that ensure protection of fish and wildlife habitat with a known level of confidence	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
71.	Tim	Whitehouse	PEER	95601	128	Water Resources	Evaluate efficacy of current practices and applicability to coastal plain, 1002 area to support science-informed NEPA processes and BMPs that ensure protection of fish and wildlife.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
72.	Tim	Whitehouse	PEER	95601	130	Water Resources	Cross reference existing technical reports to map any known areas of special values including Wild and Scenic Rivers, springs, subsistence use areas, and recreational areas (e.g. Canning River takeout). Identify data gaps in our knowledge in addition to those mentioned previously.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
73.	Tim	Whitehouse	PEER	95601	131	Water Resources	Develop NHDPlus High Resolution hydrography framework, which extends the hydrologic network seamlessly across the terrain by including not only streams and lakes, but also associated catchment areas that drain to each lake or stream segment. This association allows information about the landscape to be related to the drainage network. Observational data on the drainage network, such as water quality samples, stream gauge measurements, or fish distribution, can be linked to the framework, integrating data and facilitating analyses required during all phases of exploration and development. This effort should be combined with wetland and vegetation surveys (see resource assessment for wetlands and vegetation).	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
74.	Brook	Brisson	Trustees for Alaska	96981	105	Water Resources	The draft EIS includes a list of potential future impacts on surface water quality. ⁷⁸⁸ This list fails to include changes to surface hydrology and drainage patterns associated with changes in vegetation and soil resources, as well as from water impoundment. Any time water collects, there is greater heat transfer to the adjacent soil. Once water channels or ponding are changed or increased, there is a positive feedback cycle of warming and acceleration of thaw. Changes to surface hydrology drainage patterns can lead to increased thermokarst erosion and thermokarsting. Elsewhere in the draft EIS, BLM states that "[p]otential disturbance of the vegetation or water and wide erosion could initiate thawing of the upper ice-rich zones and trigger the development of thaw-lakes." ⁷⁸⁹ BLM also needs to consider the development of thaw-lakes, thermo-erosion channels, and thermokarst features in that section.	The bulleted list of future impacts on surface water quality includes thermokarst, blockage of natural drainage, erosion, and sedimentation.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
75.	Christopher	Benson	—	55243	1	Water Resources	One of the most significant shortcomings in this assessment is that of the impacts of ice road construction and the associated impacts on stream flows and ground water dynamics. This area of Alaska has had little long-term monitoring of surface waters and ground water dynamics; the impact associated with ground water withdrawal or surface water diversion is unclear in the current assessment. Because streams and rivers provide essential habitat for a variety of critical species, this is an unacceptable oversight and needs to be amended.	Further discussion has been added to alternative impacts.
76.	Greta	Burkart	—	96243	101	Water Resources	Total projected ice road use should be presented under development scenarios. It is expected that ice road use could increase greatly under alternative B. Without assessments of ice road use under all alternatives, it is not possible to adequately conduct analyses of the impacts of development on vegetation, fish, other aquatic species, birds, soils, and water.	Further discussion has been added to alternative impacts.
77.	Kaarle	Strailey	—	95670	6	Water Resources	How would impacts of exploration and development be assessed and monitored?	Impacts of exploration and development are assessed and monitored by the agency who issues the required permits to move forward with any project.
78.	Greta	Burkart	—	96243	70	Water Resources	F-18 Section/Description F.4.10 Water Resources Comments The types of impacts under barge docks and seawater treatment plant construction and operation should include alterations of water temperature salinity, currents, and sediment deposition. Will there be wastes disposed of STP as well? If so, alteration of nutrient cycles and introduction of contaminants should also be considered potential impacts.	Further discussion has been added to alternative impacts.
79.	—	—	United States Fish and Wildlife Service	97942	196	Water Resources	Page 3-58, Last paragraph: It should be stated that erosion and thermokarst related to development activities will have long-term impacts on surface water quality.	Further discussion has been added to alternative impacts including that adequate drainage to infrastructure such as ice roads will help mitigate impacts such as causing thermokarst.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
80.	Greta	Burkart	—	96243	92	Water Resources	It cannot be assumed that water will be recharged during snowmelt because of stipulations in place. Adequate recharge depends on several factors including connectivity, watershed area and snow water equivalent. Many isolated lakes in small watersheds have very limited recharge capacity and may not be fully recharged during snowmelt after water withdrawal, especially during low snow years. For more information on “recharge vulnerable” lakes in the NPRA see figure 6 in Jones et al 2017 (A lake-centric geospatial database to guide research and inform management decisions in an Arctic watershed in northern Alaska experiencing climate and land-use changes. Ambio. Volume 46). More than 50% of the lakes presented in this study are considered recharge vulnerable. An even greater proportion of the lakes in the 1002 Area of the Arctic Refuge are likely recharge vulnerable.	ROP 9 in the Draft EIS discussed the calculations to be done to determine how much water can be used from the potential source to prevent overuse.
81.	Brook	Brisson	Trustees for Alaska	96981	134	Water Resources	The draft EIS fails to provide sufficient maps and accompanying information for water resources in their full diversity, including watershed boundaries and detail for rivers, streams, lakes, springs, river floodplains, and river auefis (icings, nalads), and coastal lagoons and barrier island systems, river deltas, bays, and shorelines. Current and historical maps and information on auefis in the Coastal Plain should be provided to detect changes, including those which may be underway due to climate change.	Map 3-13 delineates streams and rivers along with gaging stations. Further analysis has been conducted to determine if other features need to be added to the Map for discussions.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
82.	Paul	Torrence	—	69213	1	Water Resources	The DEIS does not account for the detrimental environmental impact of fossil fuel derived carbon dioxide upon ocean acidification. Ocean acidification is caused by dissolution of atmospheric carbon dioxide in ocean and fresh waters all over the planet. This effect is directly proportional to the carbon dioxide concentration in the atmosphere.	The term “ocean acidification” is misleading, as oceans will not become acidic with increasing CO ₂ concentration, but rather, slightly less basic, compared to the current pH which averages slightly over 8.0. A pH of 7.0 is neutral, so the pH needs to drop below 7.0 for the ocean to become acidic. Ocean life flourished during geologic ages that experienced atmospheric CO ₂ many times current levels, and even those CO ₂ levels did not turn the ocean acidic, given its huge buffering capacity.
83.	—	—	United States Fish and Wildlife Service	97942	197	Water Resources	Page 3-59: Under “Changes to Marine Waters” and elsewhere in the document: we question that the effects of an oil spill would be “short-term and localized,” And recommend that you remove this statement. Effects and damages from an oil spill depend entirely upon the circumstances of the spill, including material type, volume, spill response capability, weather, and sensitive resources in the area of the spill.	Lease Stipulations and ROPs will require practices to be undertaken to minimize the likelihood of spills. the effects and damages from an oil spill depend entirely upon the circumstances of the spill, including material type, volume, spill response capability, weather, and sensitive resources in the area of the spill.
84.	Wendy	Loya	USFWS United States Fish and Wildlife Service	97942	199	Water Resources	Page 3-59: Insert, “Infrastructure and operations will result in permanent changes to permafrost resulting in thermokarst and irreversible impacts to overland flow and shallow groundwater.”	While infrastructure and operations could result in changes to the permafrost including thermokarst, these impacts can be mitigated through proper drainage design and adherence to the stipulations and ROPs. Further discussion has been added to the impact analysis text.
85.	Withheld	Withheld	—	77689	1	Water Resources	And to address the MOST precious resource, the drafted EIS says NOTHING about pollution of the limited water sources on the Arctic Coastal Plain. It says nothing about polluted runoff that could contaminate freshwater streams, impacting the fish and other wildlife that depend on clean, fresh water for their survival.	Lease Stipulations and ROPs set forth for development protects water sources in the Coastal Plain from potential pollution by limiting and removing the pollution sources. Additional text has been included in the impacts section.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
86.	Jill	Nogi	Environmental Protection Agency	71634	22	Water Resources	We appreciate that the DEIS includes discussion of possible wastewater discharges associated with oil and gas operations within the program area, in response to previous recommendations made based on our review of the Administrative Draft EIS. We continue to recommend that the EIS provide additional information regarding the potential discharges, including pollutants of concern likely to be present in the waste streams, and the potential impacts to surface waters, within the section on "Changes to Surface Water Quality."	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
87.	Brook	Brisson	Trustees for Alaska	98271	19	Water Resources	BLM also assumes that permitted withdrawal rates would not exceed recharge rates. It is not clear what this assumption is based on given that BLM lacks considerable information about both precipitation and water resources for the Coastal Plain as previously explained and given FWS explanation that existing information on these topics is not correlated. BLM must explain this conclusion and provide the basis for it.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur, the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
88.	—	—	Alaska Department of Natural Resources	94102	77	Water Resources	53 References Correction The first listing under ADEC cites to a draft Integrated Water Quality Monitoring and Assessment Report. This citation should be updated to refer to the final report that was issued on November 2, 2018.	The reference has been updated to reflect the final report.
89.	Brook	Brisson	Trustees for Alaska	96981	130	Water Resources	New, complete annual information must be obtained for these rivers to inform BLM's analysis. There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents how to quantify and describe hydrology (surficial and subsurface). BLM must take into account all historical water quality and quantity information ⁸⁶² and also utilize best spatial data and current scientific literature, cited herein, in its description of the water resources and obtain necessary information to do so. Having updated information is particularly important given the impacts that climate change is having on water resources in the Arctic.	Additional references of baseline data for streams has been located and will have been incorporated in the EIS.
90.	—	—	United States Fish and Wildlife Service	97942	195	Water Resources	Page 3-58: The reference to BLM 2012 4.5.4.2 is not relevant to the 1002 area and does not present an analysis or discussion, as it simply states that impacts are not long-term and provides no supporting data. Recommend deleting the statement or providing a more appropriate reference if the statement is retained.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
91.	Brook	Brisson	Trustees for Alaska	98271	24	Water Resources	The assessment of lakes and stream-lake connections is inaccurate within the DEIS. To understand the distribution of lake types, stream-lake connectivity and lake sensitivity to climate change and water withdrawal across the CP, an extensive lake-based database needs to be created and lakes must be classified based on a suite of attributes following methods outlined in Jones et al. (2017). First, IfSAR digital surface model, high resolution satellite imagery along with field data should be collected for all lakes and tundra ponds within the entire CP. Then additional data layers such as surficial geology, lake surface area change, stream connection and landcover vegetation should be collected, and then finally a lake classification should be completed. Without a detailed understanding of lakes types across the CP, it is impossible to quantify or accurately describe the baseline of the affected environment. Currently, within the DEIS section 3.3.2 affected environment, information is missing, and the provided data is likely inaccurate to quantify lentic fish habitat.	Additional references of baseline data for streams has been located and has been incorporated in the EIS.
92.	Withheld	Withheld	—	70934	27	Water Resources	Table 3 - 17, The Sadlerochit river has been omitted from this table. What are the values associated with that watershed? It is unique in its hydrology in that it has deep springs and has a connection to deep glacial lakes Neuruokpuk Lakes. Is the omission intentional? If so it needs to be justified. If it was not included in error, it is yet another indication of an incomplete and poorly considered project.	The Sadlerochit River has been added to Table 3-19 of the Final EIS.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
93.	Tim	Whitehouse	PEER	95601	22	Water Resources	What are key information gaps? 1. Sea ice dynamics 2. Coastal erosion: We need updated shoreline erosion/change rates. Sandia National Laboratories and partners have proposed developing a predictive model of thermos-abrasive erosion for the permafrost Arctic coastline, which will complement efforts by the Beaufort Lagoon Ecosystems LTER (See sec 4. Coastal Habitats) and BOEM's Wave and Hydrodynamic Modeling in the Beaufort Sea (Stefansson Sound). USGS will conduct research on shoreline change in 2018 to understand coastal bluff and beach change. a. Overview presentation available at: https://www.iarpccollaborations.org/members/documents/10925?utm_medium=email&utm_source=transactional&utm_campaign=Weekly b. BOEM's Wave and Hydrodynamic Modeling in the Beaufort Sea is calibrated for Stefansson Sound, but will be informative along the broader coastline https://www.boem.gov/po-ak-17-01/	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
94.	Jill	Nogi	Environmental Protection Agency	71634	25	Water Resources	Seawater Treatment Plant While the DEIS states "Discharges of various pollutant concentrations in the future from an STP would be required to meet standards in the treatment plant's APDES discharge permit and potential mixing zone requirements," there is no discussion describing the STP, how it operates, and what purpose it serves. We recommend including this additional information in the EIS, as well as disclosing the potential impacts of the STP. Regarding the potential impacts of wastewater discharge, we note that STPs are ongoing operations resulting in at least one continuous wastewater discharge of pollutants to surface waters of the U.S., subject to NPDES/APDES permitting under the Clean Water Act. Pollutants commonly associated with seawater treatment plant operations include: total suspended solids, salinity, pH, and chlorine. Discharges can contain significant concentrations of pollutants within the vicinity of the discharge location (i.e., higher than the ambient values in the receiving surface water) that may cause or contribute to exceedances of the State of Alaska surface water quality standards, including within a mixing zone, if one is authorized.	Further impact discussion has been included in the EIS including discussion of ROP 2.
95.	Richard	Edwards	—	74281	48	Water Resources	The major shortcomings of the Water Resources analysis in this Draft EIS are again highlighted here. There is no discussion of potential desalination impacts----not even a desalination-related bullet item in the list of primary water quality issues resulting from the proposed development (page 3-55). This is significant in light of the fact that STP use may be far greater than anticipated because freshwater is scarce and becoming even more scarce on the Coastal Plain as a result of climate change.	Further impact discussion has been included in the EIS including discussion of ROP 2.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
96.	Richard	Edwards	—	74281	49	Water Resources	The document fails to provide the Responsible Official and the public with even a basic understanding of the risks and magnitude of the potential adverse impacts of desalination on the already increasingly stressed nearshore marine environment of the Coastal Plain. The Draft EIS must be revised to fully address the range and magnitude of potential impacts of the proposed network of STPs.	Further impact discussion has been included in the EIS including discussion of ROP 2.
97.	Valerie	Kuntz	—	95025	2	Water Resources	Freshwater is scarce on the Coastal Plain; there is no way the lakes and rivers could supply that amount of water without completely decimating fish and wildlife habitat. The DEIS attests that freshwater sources "may" not be sufficient (Vol.2, B-16). A seawater treatment plant is assumed and envisioned in the DEIS, but the DEIS also notes that this increases the cost for development, and this infrastructure would increase the footprint for infrastructure; it would also require a road and seawater transport pipeline.	ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
98.	—	—	United States Fish and Wildlife Service	97942	177	Water Resources	F-18, F.4.10: Recommend the types of impacts under barge docks and seawater treatment plant construction and operation include alterations of water temperature, salinity, and currents, as well as sediment deposition.	Further impact discussion has been included in the EIS including discussion of ROP 2.
99.	Tim	Whitehouse	PEER	95601	110	Water Resources	What habitats or areas need additional protection due to their vulnerability and/or high-value to fish, waterbirds, other wildlife, recreation, and subsistence?	Sensitive water resources are called out in Table 2-2 Lease stipulations and ROPS by Alternative.
100.	Greta	Burkart	—	96243	71	Water Resources	F.4.10 Water Resources Comments Snow roads can impact vegetation, lead to thermokarst, and alter water quality. Impacts to water quality should be listed under type of impact. Impact indicators should include change to surface water quality	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
101.	Brook	Brisson	Trustees for Alaska	98271	12	Water Resources	Furthermore, disposal of drilling wastes (drilling muds, hazardous wastes, and other substances) through injection into the subsurface would risk far different impacts in the Refuge Coastal Plain region due to freshwater groundwater reservoirs with flows into deep groundwater springs with complex connections given the highly faulted subsurface (Kane et al 2013). Contamination from injection of hazardous wastes and fracking (especially in the Northwest corner in the Brookian shale) risk irreversible impacts to water quality and quantity and fisheries in the Refuge Coastal Plain's spring-fed systems. Yet these impacts were not evaluated.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
102.	—	—	United States Fish and Wildlife Service	97942	176	Water Resources	F-18, F.4.10: Recommend the types of impacts under drilling and operation be expanded to include reinjection of waste/hazardous waste. Impact indicators should include ground water quality.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
103.	—	—	United States Fish and Wildlife Service	97942	201	Water Resources	Page 3-59: In the impacts analysis section, note that contamination related to injection of hazardous wastes in subsurface areas and fracking could have major irreversible impacts to the ground and surface water quantity and quality and could impact major spring-fed systems that are important for wildlife and subsistence users. This is an important piece of information for subsistence hunters.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.

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104.	Richard	Edwards	—	74281	28	Water Resources	In several sections, the Draft EIS states that groundwater injection wells will be utilized to dispose of wastewater discharge from future oil and gas activities (e.g., page 3-59). Such wastewater would include sanitary/domestic waste, produced water, spent fluids and chemicals, as well as waste water generated from field use of 2 million gallons per day. The document states that "inject on of wastewater reduces potential impacts on surface waters or the land by injecting waste water deep underground into zones isolated from drinking water sources" (page 3-64). In short, groundwater injection is portrayed as the answer to most water quality issues. However, the Draft EIS lacks any discussion or analysis of the potential risks associated with use of injection wells in this arctic environment. What are the potential impacts of saltwater and wastewater injection in this environment? The practice is portrayed as a neutral best management practice--what are the related risks? What issues arise with this practice over the long-term---after site abandon-ment?	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
105.	Richard	Edwards	—	74281	29	Water Resources	The Draft EIS must be revised to include discussion and analysis of the potential impacts of groundwater injection wells.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
106.	Greta	Burkart	—	96243	79	Water Resources	F.4.10 Water Resources, Impacts and Indicators Comments Injection of hazardous wastes should be listed as an action impacting water resources. The type of impact would be potential contamination of ground and surface waters. The impact indicators would be surface water quality/contamination and groundwater quality/contamination. When conducting the analysis, consider that the potential for impacts to groundwater would be reduced under alternatives with stipulations that provide a protective buffer around major spring-fed rivers.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
107.	Tim	Mayer	—	56678	5	Water Resources	(pg 3-54). The USFWS has unquantified federal reserved water rights for water on the refuge and has also filed for state water rights in 1994-1998 to protect this resource. The quantity of water associated with these state rights, not yet determined, is the quantity needed to meet the purposes of the refuge: "to conserve fish and wildlife populations and habitats in their natural diversity and to ensure water quality and necessary water quantity within the refuge." These rights need to be quantified and the amount of water needed to meet refuge purposes needs to be determined prior to any use of water for leasing and oil exploration.	Since the amount of water reserved is undetermined the EIS now shows where the water reservations occur within the Arctic Refuge Coastal Plain on Map 3-13.
108.	Jill	Nogi	Environmental Protection Agency	71634	21	Water Resources	Some waste streams associated with oil and gas development (e.g., seawater treatment plant discharges, gravel mine dewatering, and sanitary/domestic wastewater) are commonly discharged to surface waters. We therefore recommend adding "increased load of pollutants from wastewater discharges" to the list of potential future impacts on surface waters.	According to ROP 2 pumpable waste products will be required to be injected in a UIC well. Further, disposal of wastewater and domestic wastewater will have to be authorized by the state permits. The impacts under the permits can be discussed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
109.	Greta	Burkart	—	96243	18	Water Resources	There must be adequate data for an evaluation of the efficacy, applicability and transferability of BMPs, permit stipulations and mitigation measures used in the NPR-A for use on the coastal plain, 1002 area (per National Research Council (NRC) 2003) for all phases of industrial activity (seismic, exploration, development, restoration). This evaluation must recognize and understand the implications of the stark hydrologic, soil, and topographic differences between the coastal plain, 1002 area and areas in the NPR-A with ongoing development: o Water covers 20.2% of the developed area in NPR-A, but only 1.6% of the coastal plain, 1002 area where large expanses of land are nearly devoid of lakes (figure 1). o Most lakes in the coastal plain, 1002 area are isolated from major drainages with limited recharge and may be more vulnerable to water withdrawals. o Most flowing waters in the coastal plain, 1002 area are alluvial mountain streams. o Groundwater-fed springs are unique to the coastal plain, 1002 area and provide critical habitat for extraordinarily high concentrations of invertebrates and overwintering fish. o The relatively steep terrain and lack of water in the coastal plain, 1002 area will make it necessary to employ alternative untested practices. o Differences in vegetation, soil and permafrost in the 1002 Area may make the 1002 Area more sensitive to water quality impacts compared to developed areas in the NPR-A.	Lease stipulations and ROPs are developed to minimize or eliminate adverse consequences of actions (roadway development, water withdrawal, etc.). Best management practices have been developed over time in the NPR-A to further reduce the impacts of oil and gas activities. While no current practices have been developed to specifically address the Coastal Plain 1002 area, those that are in use in the NPR-A will be the first step in developing new mitigation and best practice measures appropriate for specific areas of the Coastal Plain. The direct and indirect impacts section will provide a discussion of the Lease Stipulations, and ROPs that address these impacts.

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110.	Philip	Marshall	—	67580	4	Water Resources	Figures B-1 and B-2 are conceptual projections for oil development facilities. Both suggest serious problems that are unaddressed in the draft EIS. It is that any modification to the surface of the plain will significantly affect water drainage over the oil & gas field during its lengthy lifetime. With increases in minimum temperature ranges, active layer thicknesses are increasing, degree-day permissible activity for heavy-equipment operation is shortened, and generally design for effective, long-lived structures and facilities is made more difficult. There is a likely prediction, heretofore unseen, that the variable wind directions of the inner coastal plain will significantly respond to any surface relief change (ie roads of any kind, utilidors, pipelines, VSMs and buildings and facilities) by deposition of windblown snow in a changed manner so that combined with thermally-degraded surficial permafrost, an entire new network of thermokarst and fluvial features will grow, effectively "gridding" in migrating animals and any proposed construction changes during the field's life.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
111.	Richard	Edwards	—	74281	40	Water Resources	Throughout the document, ice road/pad construction and use are most often portrayed as being relatively damage neutral practices. This portrayal is undermined by statements in several places in the Draft EIS, as follows: a) In the Soil Resources section (page 3-46), we read: "These future actions, including vehicular travel on snow and ice-covered tundra, change and disturb the insulating surface vegetation layer and increase the active layer thickness, thawing the permafrost, and developing thermokarst structures. Thermokarst changes the surface topography, increasing water accumulation, changing surface water drainage patterns, and increasing the potential for soil erosion and sedimentation (BLM 2018a; Jorgenson et al. 2010)."	Further analysis of impacts to each alternative have been discussed in the EIS. However, it should be noted that although impacts may be higher for one resource it does not mean that it will be a higher impact on all resources.
112.	Brook	Brisson	Trustees for Alaska	98271	5	Water Resources	no information is provided on water biogeochemistry in lentic and lotic habitats, which is essential and necessary baseline information to quantify impacts of habitat alteration on water quality. Biogeochemical processes in aquatic ecosystems influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (see Huryn et al. 2005).	Additional references of baseline data for streams has been located and will has been incorporated in the EIS.
113.	Bruce	Campbell	—	57153	5	Water Resources	There is inadequate attention to use of toxic chemicals in the extraction process and its impacts on water resources, humans (including indigenous people), fish, and wildlife.	Further discussion has been added to alternative impacts.
114.	Thomas	Turiano	—	56599	7	Water Resources	7. Needs a more thorough analysis of the effects on water quality...ground water, surface water, and ocean water	Further discussion has been added to alternative impacts.

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115.	Withheld	Withheld	—	70934	20	Water Resources	Hydrology Paragraph #3 is factually inaccurate in using the rest of the North-slope to represent conditions in the Arctic Refuge. Yet another difference between the rest of the North Slope and the Arctic Refuge. The Canning River has deep springs that produce significant amounts of water year-round. Likewise, the Sadlerochit and Aichilik Rivers have unique hydrology and deep source springs.	The springs on the Arctic Refuge Coastal Plain and their impacts to the river systems and aufeis formations are discussed in the Draft EIS affected environment section.
116.	Dr. Julianne Lutz	Warren	—	74344	14	Water Resources	Water and waterways-What of the consequences of chemical contamination, of unknown underground flows and mixtures that encompass the welfare of every living thing, including AK Native Peoples.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.
117.	Tim	Whitehouse	PEER	95601	24	Water Resources	Coastal water quality and chemistry: Need water quality and sedimentation baselines to understand changes associated with development; much of this baseline information will be collected as part of the new Beaufort Sea LTER What studies/surveys need to be conducted to fill those information gaps? If possible, please include duration (start and end), staffing and cost estimates.	Additional references of baseline data for streams has been located and will has been incorporated in the EIS.
118.	Greta	Burkart	—	96243	69	Water Resources	F.4.10 Water Resources Comments The types of impacts under drilling and operation should include reinjection of waste/hazardous waste. Impact indicators should include ground water quality.	UIC wells are required to be drilled thousands of feet below the lowermost underground source of drinking water and in deep, confined rock formations. The UIC wells are regulated by EPA and consistently monitored. Due to these wells often being thousands of feet deep and discharging into a confined rock formation it is unlikely that this activity will affect hydrology or water quality.

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119.	Tim	Whitehouse	PEER	95601	111	Water Resources	What is the status and natural variability in water quality and quantity of rivers and lakes? This information is necessary to allow for impact assessments and adaptive management practices.	Additional references of baseline data for streams has been located and will has been incorporated in the EIS.
120.	Princess	Lucaj	—	30688	1	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Further analysis of impacts to each Alternative has been included in the EIS.
121.	Tim	Hogan	—	54762	2	Water Resources	the DEIS fails to adequately address how oil and gas activities will impact water quality and quantity on the Coastal Plain. Given the vast quantities of water needed to support an industrial complex as envisioned by the DEIS, it is critical those impacts on aquatic life, vegetation, hydrology, and overall habitat be quantified and accounted for.	Further discussion has been added to alternative impacts.

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122.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	9	Water Resources	As the US Fish and Wildlife Service stated in their comments on the Notice of Intent, "water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife." The final EIS must conduct research and peer-reviewed analyses to determine what percentage of Coastal Plain water this is, and it must further determine what this usage will do to water quality, and then what impacts this will have to the conservation of "fish and wildlife populations and habitats." These determinations must be based on up-to-date evidence and all analyses must be peer reviewed.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
123.	Harry K.	Brower Jr.	North Slope Borough	95612	57	Water Resources	3.2.10 3-52 Please list and map all of the lakes that are currently known to be of seven feet or greater in depth and have low to no salinity.	Table H-6 provides a summary of lake volume with varying thickness of ice for 119 lakes (greater than 7 feet deep). USFWS, 2015

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124.	Joan	Norberg	Yukon Conservation Society	57318	7	Water Resources	The DEIS does not clearly indicate how and where water will be obtained; neither does it indicate the impact of these large withdrawals and disposals of water. Therefore, YCS respectfully recommends that a comprehensive study of water resources take place prior to any decision regarding development in the 1002 lands.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of potential impacts resulting from each alternative is included in the EIS. It also must be noted that for any future development to occur, the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
125.	James	Warren	—	18479	7	Water Resources	Water on the Coastal Plain of the Arctic Refuge is particularly scarce. There are few open lakes and rivers compared to the Western Arctic and especially in winter when the surface is frozen there is very little free water available. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

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126.	Princess	Lucaj	—	30688	2	Water Resources	The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives. ROP 9 provides protections at the leasing stage for water quantity and quality. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.
127.	Withheld	Withheld	—	55209	3	Water Resources	The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does not do an adequate job of analyzing impact to that water quantity.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
128.	Robert	Burgess	—	55298	4	Water Resources	The scarcity of water is inadequately addressed, as is the potential impacts to water from oil spills, which are likely to occur	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
129.	Paul	Reichardt	—	55513	2	Water Resources	While there is a lot of information on specific uses and sources of water, there is no analysis of the overall situation. The leasing and development process must ensure the maintenance of sufficient quantity and quality of water resources within ANWR. How much water will be needed for leasing and development spread over one to one-and-a-half million acres? How much water is available? I could not find a way to use data in this document to answer these important questions.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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130.	Tim	Mayer	—	56678	2	Water Resources	(pg ES-4) The DEIS lists general impacts expected from future oil and gas exploration and anticipates “impacts to water quality caused by water extraction and construction of ice roads and pads...” But it fails to even mention impacts to water quantity in this list. This is indicative of a general failure in the DEIS to adequately consider and analyze impacts to water quantity from leasing and exploration.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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131.	Tim	Mayer	—	56678	6	Water Resources	(pg 3-54). USFWS hydrologists concluded that there was 3,366 ac-ft (about 1 billion gallons) of water in the lakes in the 1002 Area in the winter (USFWS, 1996), although they also indicated that only a small quantity of this, 9 million gallons, would be available (USFWS, 2001). As noted in the DEIS on pg 3-54, "These values do not represent the total available quantity nor indicate suitable uses of the water, such as for ice road construction." Each mile of ice road is estimated to use about 1 million gallons of water and can only be transported about 10 miles or so, since it freezes (CRS, 2003). There may be technologies to surmount this challenge but they will add to the cost of development and change the economics of exploration. The USFWS (2001) estimated that the 9 million gallons would be enough for only 10 miles of ice roads. In a separate document, the CRS (2003) study estimated there was only enough water for <50 miles of ice roads. The USGS noted that potential oil reserves may be located in small reserves rather than in one big giant oil field as with Prudhoe Bay (USFWS, 2001). This would require a larger number of production sites, with associated ice roads, ice pads, drilling wells, and associated infrastructure. There are some serious challenges on the quantity of water and the DEIS has not addressed any of these.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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132.	Tim	Mayer	—	56678	7	Water Resources	(pg 3-58). The only analysis of surface water impacts of any consequence is contained in a single paragraph on this page that is contradictory and wholly inadequate. First, the DEIS states that “surface water withdrawals in the future for construction of ice roads, dust abatement, and operations would affect shallow groundwater levels, surface water levels, and drainage patterns during the summer season.” Then it goes on to state that while there are estimates of water requirements for oil and gas activities in the literature, no attempt to estimate the range of water requirements will be made in this document. Then it arrives at the non sequitur that there will be “no potential long-term impacts on lakes and ponds” and refers the reader to another document. How is this conclusion supported? How can a comprehensive analysis of the impacts of water withdrawals be done when no information is provided? How can the “environmental impacts of various leasing alternatives...and the indirect impacts...” be analyzed when no information or analysis is presented? The reader is left with many more questions than answers. What is the range of estimates for the miles of ice roads needed for exploration? Where will the water for the ice roads come from and how much will be required? How far would it need to be transported? Would companies consider or be allowed to build gravel roads or water detention basins instead, something that will severely affect runoff and the hydrology of the area, as well as the conservation of fish and wildlife? How many wells are being considered and where are they located in relation to available water? The Alaska Conservation Foundation (2019) estimated in its comments that at least 540 wells would be drilled under all the	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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132. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	alternatives, requiring between 227 million to 1 billion gallons of water. Given that the estimates of available water are much smaller than this [10 million to 50 million gallons – USFWS (2001) and CRS (2003)], where will this water come from? Decisions on the amount of area and the location of lands to lease as well as the number of wells to be drilled should be based, in part, on what and where water is available. This is a major issue for the proposed activity and it is almost completely dismissed in the DEIS. The leasing program must consider this issue in relation to the purposes of the refuge, including the provisions for the conservation of fish and wildlife and the necessary quantity of water for the refuge.	(see above)
133.	Withheld	Withheld	—	75145	10	Water Resources	In their comments on the Notice of Intent, Fish and Wildlife Service, which administers the Arctic National Wildlife Refuge, stated, "Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife." The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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134.	Vienna	Saccomanno	—	81655	1	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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135.	Alice	Levine	—	94086	6	Water Resources	I would, in addition, like to address the issue of water quantity. How much water will be needed for oil and gas development and where will it come from? When ANWR was first established under ANILCA, one of its specific purposes was to ensure "water quality and necessary water quantity within the refuge" to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence to that purpose and show how lease sales will not impact water quality and quantity. BUT The DEIS does not provide estimates on how much water will be required for drilling wells. Fresh water is scarce on the Coastal Plain; lakes and rivers could never supply the amount of water without completely decimating fish and wildlife habitat.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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136.	Monika	Seiller	Aktionsgruppe Indianer & Menschenrechte e.V.	74328	6	Water Resources	- The change of the natural drainage patterns, stream stage and stream flow, stream velocity, groundwater flow, erosion and surface changes will have impact on the no lease sale area. Especially the use of huge amounts of waters (2 Mio. gallons field use per day are estimated (3-64), while less than 2% of the Coastal Plain area is covered by lakes with a total estimated amount of 1.1 billion gallons of water, 3-52) will have an irreversible impact on the overall water quality and on the wetlands of the whole plain, since it is a connected system, as stated in the Draft EIS itself	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
137.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	7	Water Resources	Water on the Coastal Plain is scarce, the DEIS does no new analysis on how much water is in fact available there: this data is needed analyze the impacts of the action alternatives to the water resources in the area.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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138.	Withheld	Withheld	Native Village of Venetie Tribal Government	81748	100	Water Resources	Monitoring. The DEIS should consider adaptive management related to planning and construction of ice roads. ⁷¹ The absence of lakes in the Program Area raises the question of where the tremendous water quantities will be obtained to build the ice roads needed for exploration and development. The DEIS fails to adequately address this issues.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
139.	Lisa	Baraff	Northern Alaska Environmental Center	74306	13	Water Resources	One of the specific purposes of the Arctic Refuge established under ANILCA is to ensure "water quality and necessary water quantity within the refuge" to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity. Water on the Coastal Plain of the Arctic Refuge is particularly scarce. There are few open lakes and rivers compared to the Western Arctic and especially in winter when the surface is frozen there is very little free water available. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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140.	Julie	Bannister	Wildness Watch	71451	2	Water Resources	Fresh water is relatively limited on the Refuge Coastal Plain, however the DEIS does not adequately assess the impacts that industry's water use would have on fish and wildlife.	We acknowledge that fresh water is limited in the 1002 Area. Furthermore, fish habitat is very limited in the area. The available data indicate that the vast majority of fish diversity and abundance (in fresh water) occurs in the western portion of the program area, which is also the area of highest likelihood of hydrocarbon availability, as indicated in the EIS. However, until a project specific permit is requested, along with a submission of alternatives for project footprints, a full-scale impacts analysis is beyond the scope of the Leasing EIS. Additionally, Chapter 2, Table 2-2 includes Lease Stipulations (1-4 and 9) and ROPs (1-3, 7-9, 11-14, 16-22, 24, 35, 41, 44-45), which provide phase by phase protections to fish habitat to varying degrees depending on the alternative in question.

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141.	Tim	Mayer	—	56678	3	Water Resources	(pg 3-3) The 1002 Area at ANWR is extremely dry, with only 6" of annual precipitation. This is on par with annual precipitation in the desert Southwest and cities like Las Vegas, Nevada and Phoenix, Arizona. Freshwater is extremely limited in this dry environment, and is mainly available seasonally during spring breakup, not in the winter when leasing and exploration will occur. Groundwater is likely to be brackish and is not a feasible alternative so the options for water are limited to surface water sources. Oil exploration and drilling is an activity that uses a lot of water. Oil exploration and drilling in the 1002 Area is analogous to, and in some ways, as foolhardy as, growing cotton in the desert. Maybe even more so since in this case, there is no Colorado river system or equivalent source of water. If one is going to analyze the environmental impacts of a water-intensive activity taking place in a desert, one must consider water quantity. This includes an accounting of the quantity of water needed and the quantity of water available, in this case, all while explicitly considering the purposes of the refuge.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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142.	Charlotte	Basham	—	58396	4	Water Resources	The EIS does not sufficiently deal with the question of how much water is available on the coastal plain and how much water will be required.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
143.	Marcus	Lanskey	—	59655	2	Water Resources	the DEIS does not account for the loss of scarce fresh water on the Coastal Plain.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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144.	Withheld	Withheld	—	59729	3	Water Resources	It does not adequately assess the impacts of the industry's water use on the limited fresh water available on the Refuge Coastal Plain.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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145.	Martha	Raynolds	—	67039	8	Water Resources	This section is very weak in all aspects. There are no current references for lakes, rivers, springs or aufeis. There are no maps. Obviously new studies are needed. And not just as part of future oil & gas EIS after leasing, but as part of this EIS to determine if leasing is a realistic option. Water resources may well be the limiting factor for operations in the Arctic Refuge. The EIS must quantify the amount of water needed vs. the actual amount of water available. This section states, "no potential long-term impacts on lakes and ponds are anticipated from ice roads, ice pads, or ice bridges, as discussed in BLM 2012, Section 4.5.4.2." The BLM NPR-A study is not relevant for the Arctic Refuge, which has very different physiography and water resources. The impacts to hydrology of the hilly coastal plain and foothills to linear features such as roads and seismic trails should be discussed. This was one of the obvious effects from changes in surface topography caused by previous seismic exploration in the Arctic Refuge.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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146.	Christopher	Lutz	—	67596	3	Water Resources	The document needs to be expanded to fully answer the following option specific water impact questions; (a) how much is needed?, (b) when will it be needed?, (c) what is the source?, and (d) what is the oil and gas development water quality impact?	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
147.	Peter	Stern	—	69296	23	Water Resources	Page 3051 Section 3.2.10 goes into a lot of detail about water quality but stays away from water withdrawal requirements other than to say the lakes may be used and amounts of water used must stay within predicted recharge rates. Recharge rates are acknowledged to be variable but no mention of how this is going to be monitored.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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148.	Q	Long	—	69710	14	Water Resources	Comment-P. 3-9 Ch 3.2.10 Water Resources, Impacts Common to all Action Alternatives. Water Withdrawals One must conclude that there is Limited Water Resources for Industry Use. It is questionable whether there is enough water available for industry to operate for the full oil and gas leasing program proposed. What is the carrying capacity of the water resources on the coastal plain if the leasing program commences?	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
149.	Becky	Long	—	69710	16	Water Resources	The DEIS itself says that drilling each well requires 420,000 to 1.9 million gallons of water. All of the alternatives have that at least 540 wells would be drilled. This will require between 227 million to 1 billion gallons of water just to drill the wells. Every ice road mile needs 1 million gallons, and an ice pad needs 500,000 gallons. Daily production of oil would require 2 million gallons of water per day. The DEIS says that over the life span of the program, which is on a 50 to 100 year period, there would be up to 142 million barrels per year on the average. This is billions of water per year. 1.3 billion gallons yearly to drill and 5.7 billion gallons per year once production starts. The draft does no new analysis on how much water is actually available.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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150.	Heather	Mirczak	—	71628	5	Water Resources	At this time the amount of surface water available on the coastal plain is limited. The BLM does not have conclusive studies on water availability. It appears that construction of infrastructure like ice roads and pads require a significant amount of water (1 million gallons for every mile of road constructed and 500,000 for every ice pad). This does not account for the amount of water needed for daily oil production. My concerns are two fold: first is the effect of drilling and development on the existing water sources along with the many species who rely on them and the pristine quality of the water.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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151.	Withheld	Withheld	—	72234	2	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. As the DEIS explains, there are few open lakes and rivers compared to the Western Arctic and in winter there is little free water available. The DEIS offers no estimate and analysis of the cumulative impact of the operations of exploration and drilling on the water supplies – or how much water is available on the Coastal Plain during different seasons.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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152.	Ruth	Wood	—	73662	1	Water Resources	BLM did no new analysis of the amount of water available on the Coastal Plain, and given the changes in climate over the last two decades, a current analysis is needed in the Draft EIS. The EIS doesn't give a figure for the total quantity of water that would be used, but it has scattered information that indicates that the requirements are substantial and could be detrimental to the wildlife and habitat in the Coastal Plain. For example: the drilling of the wells could use as much as one million gallons of water, perhaps more; every mile of ice road requires one million gallons of water, each ice pad a half million gallons; daily production of oil would require millions of gallons. These uses will take water needed to sustain habitat and life and divert it. The impacts and the cumulative impacts of water use need to be studied, explicitly stated, and BLM must say how they will fulfill the purpose "to ensure water quality and necessary water quantity within the refuge."	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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153.	Richard	Edwards	—	74281	22	Water Resources	Given the facility consumptive use figures in the Draft EIS (Hypothetical Development Scenario) the Center for American Progress estimated that: 1) up to and perhaps more than 1.3 billion gallon of water would be needed to drill the proposed oil wells and 2) up to 5.7 billion gallons of water could be needed to support oil production annually during the projected 50-100-year operation in the Coastal Plain. This development scenario is being projected onto a sensitive landscape in which available fresh water is scarce and growing scarcer. In the fisheries section, we find statements such as the following (page 3-48): "Because unfrozen freshwater in winter is scarce in the program area, any future withdrawal from these areas would have the most adverse effects on fish. These springs and deep lakes are sensitive areas, in part because there are so few of them that they limit the distribution of fish in the program area." The document acknowledges that even the most basic snowfall data for the Coastal Plain is limited. We read on page 3-51: "Snowfall measurements date back to 1949 on Barter Island, but the monitoring site was taken out of service in 1989, resulting in a discontinuous record of snow climatology. In 2000, three meteorological stations were established ...in remote parts of the Refuge...The limited data available from these stations are the only modern continuous record of snow accumulation in this region of Alaska." How do we know that the trend in annual precipitation is adequate to satisfy the demands of oil and gas development balanced with conservation---especially in light of accelerated climate change alteration of this environment? We do not---a clear example of the need for delayed leasing at the very minimum.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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154.	Q	Edwards	—	74281	23	Water Resources	The Water Quantity discussion in the Water Resources section is totally comprised of the following paragraph (page 3-54): "Water quantity in the program area has been calculated and documented by the USFWS (Lyons and Trawicki 1994). There are 119 lakes with an annual ice-free volume of 55,382 acre-feet, as summarized in Table H-6 in Appendix H. This volume is reduced to 3,366 acre-feet in April, when there is approximately 7 feet of ice. These values do not represent the total available quantity nor indicate suitable uses of the water, such as for ice road construction." The reviewer is left with the question: Then what is the total quantity of water reasonably available for use---by season and by water use activity---in comparison to the demands of the Hypothetical Development Scenario?	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Any future actions or activities are required to receive the appropriate authorizations for water withdrawals. A determination of specific water withdrawals and impacts on water quantity cannot be made until site-specific development activities are proposed.

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155.	Richard	Edwards	—	74281	24	Water Resources	The discussion continues on page 3-58, as follows: "Surface water withdrawals in the future for construction if ice roads, dust abatement, and operations would affect shallow groundwater levels, surface water levels, and drainage patterns during summer season. Lakes would be the principal supply for freshwater during construction. Ice roads and ice pads would be constructed to support construction under all action alternatives for access during the winter season. Although estimates of water use for oil and gas activities on the North Slope have been made in literature, the actual amount of water used would be project specific and would be based on BMPs, new technology, and the specific needs of the project, such as the width of ice roads, number of camps, number of crew, and ice pad size. Under all action alternatives, no potential long-term impacts on lakes and ponds are anticipated from ice roads, ice pads, or ice bridges, as discussed in BLM 2012, Section 4.5.4.2." It is interesting that this paragraph claims both the inability to estimate consumptive water use because it would be "project specific" while also claiming that construction of ice roads, pads and bridge would have no potential long-term impacts on water resources. How is the above conclusion possible? How valid is the scenario presented in the referenced BLM document?	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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156.	Richard	Edwards	—	74281	25	Water Resources	In the hypothetical Development Scenario, the lack of data and analysis uncertainty regarding available water resources is clearly reflected in this text (page B-16): "A seawater treatment plant could also be constructed along the coast, if needed, to source saline water for waterflooding, reservoir pressure support, or other subsurface uses. Groundwater aquifers or local lakes and rivers are typically the preferred water sources, due to the cost and maintenance requirements of a seawater desalination plant; however, due to the limited information about groundwater resources in the Coastal Plain, those sources may not be sufficient to meet water needs. Thus, for the purpose of analysis, it is assumed that a seawater treatment plant would be required." Perhaps the most telling excerpt from the DEIS that illustrates the inadequacy of the consumptive water use analysis is as follows (page 3-59): "Freshwater would be withdrawn from lakes in the program area in the future for several primary uses: construction of ice roads and pads, pipeline maintenance, production drilling, and potable water at camps. Water would also be used for dust control on roads. This water would be recharged in the spring when snow and ice melt increase flow volumes in connected water bodies, assuming that withdrawal rates would not exceed recharge rates, based on BMPs, permitting, and permitting requirements." The discussion of impacts by action alternative (page 3-60) consists of recitation of the lease area and a stock rehash of what Lease Stipulations and ROPs apply to that alternative. Will BMPs really be adequate? This section does not provide the Agency with any quantitative analysis useful to the Responsible Official.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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157.	Withheld	Withheld	—	75132	1	Water Resources	Developing a DEIS should be a multi-year, multi-part process and BLM's condensed approach to developing this DEIS leaves data gaps regarding, among many other issues, water quality and quantity. By design, ANILCA should have guaranteed "water quality and necessary water quantity within the refuge" but BLM's haste to publish the final draft of the EIS leaves these questions glaringly unaddressed. Withdrawal of ground and surface water required for drilling purposes in the refuge can ostensibly have a major impact on the fish and wildlife populations and the habitat of the refuge, and further study is necessary to generate and evaluate this data. BLM should thoroughly analyze potential impacts to aquatic and riverine systems, both localized and downstream, and their impacts on resources dependent upon those systems in order to ensure water quality and quantity. The current DEIS is insufficient for these purposes.	This level of specificity would be determined at the project-level authorization. Site-specific analyses, including those associated with infrastructure in support of oil and gas development, can more realistically be provided when the BLM receives an application to permit such infrastructure. The Leasing EIS makes no decisions on such infrastructure, except to prohibit it in specified areas of particularly high value surface resources under some alternatives.
158.	Jeannie	Ambrose	—	75238	5	Water Resources	A comprehensive hydrological assessment of the available water supply in the ANWR Coastal Plan should be conducted. What happens to regional water quality and quantity when O&G drilling begins? Millions of gallons of water are required daily for each well during the drilling process. What happens to the wastewater generated? The cumulative amounts of water withdrawals will adversely impact the needs of wildlife and humans that inhabit the area.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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159.	Andrew	Ogden	—	75704	6	Water Resources	This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity. Water on the Coastal Plain of the Arctic Refuge is particularly scarce. There are few open lakes and rivers compared to the Western Arctic and especially in winter when the surface is frozen there is very little free water available. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
160.	Withheld	Withheld	—	80930	4	Water Resources	The DEIS fails to adequately address the enormous impacts that the proposal would have on water quality and quantity. This belies one of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA: to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. The US Fish and Wildlife Service emphasized concerns about the “cumulative impacts of all stages of oil and gas development” on water: “Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.”	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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161.	Cami	Dalton	—	81670	1	Water Resources	Water is the key to life. Everything in the refuge depends on water. I believe that drilling in the refuge could impact the quantity of water available for the habitat. There is no new analysis in the EIS about the availability of water on the Coastal Plain and does not do a thorough job on analyzing the impact of drilling to the existing water quality in the refuge. If each well requires 1-2 million gallons of water, where is this water coming from?	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
162.	Withheld	Withheld	—	82848	7	Water Resources	The EIS fails to update estimates of free-water availability for construction activities in the leasing area, and as such the estimates of total water usage (and cumulative impacts on water quality and quantity for people and aquatic ecosystems) fall short.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
163.	Withheld	Withheld	—	83331	2	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water in this Refuge which has] few fresh water sources, especially in winter. The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge. In their comments on the Notice of Intent, Fish and Wildlife Service, which administers the Arctic National Wildlife Refuge, stated, “Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.” The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
164.	Withheld	Withheld	—	83461	1	Water Resources	One of the specific purposes of the Artic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. While water is scarce on the Coastal Plain, the DEIS is deficient in providing any clear estimate of how much water will be required for oil and gas drilling. The Center for American Progress did this and found that 540 wells would be drilled, requiring between 227 million and 1 billion gallons of water to drill wells, AND, 2 million gallons of water DAILY to build ice roads and ice pads, at a production of 50,000 barrels of oil daily. The US Fish and Wildlife Service shared concerns with NOI regarding the “cumulative impacts of all stages of oil and gas development” on water. They further stated, “Water withdrawals from streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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165.	Withheld	Withheld	—	84578	2	Water Resources	A second purpose of the Refuge is “to ensure water quality and necessary water quantity within the refuge.” BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity. Also, the DEIS avoids providing a clear estimate of how much water will be required, but other entities have estimated that huge quantities will be required for wells and ice roads. US Fish and Wildlife Service expressed concerns about the “cumulative impacts of all stages of oil and gas development” on water stating, “Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.”	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
166.	Withheld	Withheld	—	92034	9	Water Resources	Water: One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water in this Refuge which has] few fresh water sources, especially in winter. The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge. In their comments on the Notice of Intent, Fish and Wildlife Service, which administers the Arctic National Wildlife Refuge, stated, “Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.” The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
167.	Withheld	Withheld	—	92067	3	Water Resources	As mentioned above, one of the purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quality” Although the DEIS discusses the use of millions of gallons of water in drilling an oil well, it does not clearly explain how much water drilling and other activities would use. Water, especially fresh water, is scarce there in the winter. There is no consideration on how much clean water would be left for fish, birds, and the entire ecosystem at any time in the year.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
168.	Withheld	Withheld	—	92095	3	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that “Potential impacts on hydrology associated with construction of gravel pads, roads, and airstrip and ice roads would persist through the life of an individual project, including natural drainage patterns, stream stage and stream flow, stream velocity, groundwater flow, and lake levels, as described previously. The duration of impacts would be long term because the gravel infrastructures would remain during operation. Reclamation has not been proven for gravel removal in the arctic environment once operations have ceased.” (3.3.2; p 57). The DEIS does not adequately address how these impacts will be minimized or mitigated. Clearly oil and gas development is not compatible with established purposes of the Refuge.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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169.	Ruth	Wood	—	92475	13	Water Resources	Purpose (iv) to ensure water quality and necessary water quantity within the refuge. Water is pretty important to all life. BLM did no new analysis of the amount of water available on the Coastal Plain, and given the changes in climate over the last two decades, a current analysis is needed in the Draft EIS. The EIS doesn't give a figure for the total quantity of water that would be used, but it has scattered information that indicates that the requirements are substantial and could be detrimental to the wildlife and habitat in the Coastal Plain. For example: the drilling of the wells could use as much as one million gallons of water, perhaps more; every mile of ice road requires one million gallons of water, each ice pad a half million gallons; daily production of oil would require millions of gallons. These uses will take water needed to sustain habitat and life and divert it. The impacts and the cumulative impacts of	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
170.	Withheld	Withheld	—	92858	6	Water Resources	There is not sufficient detail in the EIS about how and where water resources will be used and what the impact will be if water needs to support a drilling operation including the creation of ice roads are prioritized over the needs of fish, wildlife, and the natural hydrological systems.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is includedAlternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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171.	Barbara	Nabors	—	93673	3	Water Resources	The EIS must fully address the refuge's purpose and the implications of oil and gas development. The EIS must be revised to address how the original refuge purpose will be maintained with the impacts of oil and gas development.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included. Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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172.	Karen	Bollinger	—	94054	3	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
173.	Karen	Bollinger	—	94054	4	Water Resources	Water on the Coastal Plain of the Arctic Refuge is particularly scarce. There are few open lakes and rivers compared to the Western Arctic and especially in winter when the surface is frozen there is very little free water available. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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174.	Linda	Brown	—	94624	2	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity. Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife. BLM must add such an analysis to the Final EIS.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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175.	Withheld	Withheld	—	96175	6	Water Resources	Fresh water is scarce on the Arctic Refuge Coastal Plain, and a key purpose of the Arctic Refuge is to protect water quantity. When ANWR was first established under ANILCA, one of its specific purposes was to ensure “water quality and necessary water quantity within the refuge” to conserve fish, wildlife and habitats. This EIS must demonstrate adherence to that purpose and show how lease sales will not negatively impact water quality and quantity.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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176.	Helen	Nienhueser	—	97946	1	Water Resources	One of the topics that is dealt with inadequately is water. Water is scarce there, wildlife depend on it, and you have not taken the time to figure out how much water will be used and to analyze, based on good, current data, how that will affect wildlife,. birds, and the Gwich'in people.	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
177.	Margi	Dashevsky	—	98093	7	Water Resources	There are few open lakes and rivers compared to the western Arctic, especially in the winter when the surface is frozen. The BLM does no new analysis of how much water is actually available on the coastal plain and, therefore, an insufficient job of analyzing impact to that water quality	Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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178.	—	—	United States Fish and Wildlife Service	97942	198	Water Resources	Page 3-59: It cannot be assumed that water will be recharged during snowmelt because of stipulations in place. Adequate recharge depends on several factors including connectivity, watershed area and snow water equivalent. Many isolated lakes in small watersheds have very limited recharge capacity and may not be fully recharged during snowmelt after water withdrawal, especially during low snow years. For more information on “recharge vulnerable” lakes in the NPRA, see Figure 6 in Jones et al. (2017). More than 50% of the lakes presented in this study are considered recharge vulnerable. An even greater proportion of the lakes in the 1002 Area of the Arctic Refuge are likely recharge vulnerable. Recommend this information be incorporated in the document as appropriate.	ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. The reference of Jones et al. (2017) has been added to the discussion on limited lake volume and recharge in the Affected Environment Section. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur, the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
179.	Greta	Burkart	—	96243	28	Water Resources	In the analyses, be specific. For most of the direct and indirect analyses in the water resources section, I can't tell what the analysis is, what it is supported by and/or what the magnitude and duration of the effects are for each impact indicator. I am extremely knowledgeable, but I am really having a hard time figuring what the analysis was and what the reported outcome is.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
180.	Greta	Burkart	—	96243	80	Water Resources	F.4.10 Water Resources, Impacts and Indicators Comments Since the development scenarios for the alternatives did not address a range of development/infrastructure needs at the level necessary to assess impacts on water resources (e.g. water withdrawal needs, ice road length, gravel mine locations and type), it is not possible to conduct an analysis that considers these factors when assessing impacts and comparing alternatives. More information is necessary to complete an adequate analysis. This information should include water needs, ice road lengths, etc. When there are a range of possibilities for a given scenario, the range should be given. This type of analysis needs to happen so that document authors can adequately assess impacts for water resources, vegetation, etc.	Further discussion has been added to alternative impacts.
181.	Greta	Burkart	—	96243	81	Water Resources	F.4.10 Water Resources, Impacts and Indicators Comments For impact indicators, consider comparing the total volume of water needed for development (250 million gallons?) to the estimated volume of liquid water available in in lakes and rivers at the end of the winter season in the 1002 area (about 1 billion gallons, Trawicki et al 1991 or Lyons and Trawicki 1994).	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
182.	Brook	Brisson	Trustees for Alaska	98271	15	Water Resources	There are many instream flow reservation water right applications pending before the Alaska Department of Natural Resources for waterbodies on the Coastal Plain.⁸⁷⁹ During the late 1980's and 1990's, the US Fish & Wildlife Service quantified water resources in the 1002 area with stream gauging and lake elevation and bathymetric studies. Based on these investigations, water rights applications were filed for at least 140 lakes and 12 river and stream segments to protect the habitat, migration and propagation of fish and wildlife.⁸⁸⁰ The purpose of these water-right reservations is for conservation and they identify the specific water flow necessary to achieve that goal. These reservation applications help meet Refuge purposes including protecting water quantity necessary to support fish and wildlife populations and habitat. These water right applications take precedence over other uses of water from these sources.⁸⁸¹ Despite the fact that these applications are publicly available and BLM is aware of them and that their existence has a major impact on what water may be available for uses related to oil and gas activities, BLM has not analyzed them in any detail. Protecting these instream flows further reduces the already limited available freshwater resources on the Coastal Plain but is not considered by BLM. A number of the applications likely cover the same waters that BLM identifies as unfrozen in the winter and potentially available for water withdrawals to support oil and gas activities. BLM must analyze the applications, clearly identifying the waters that they are for, the fish, wildlife, and habitat resources that they support, and the impact that they have on potential water withdrawals and usage for oil and gas activities. Without	Since the amount of water reserved is undetermined the EIS now shows where the water reservations occur within the Arctic Refuge Coastal Plain on Map 3-13. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Site specific analysis would be completed with a site-specific proposal.

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182. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	this information, BLM cannot know the available water, the true impacts of oil and gas on water resources and the fish and wildlife that depend on them, or craft necessary protections.	(see above)
183.	Allen E.	Smith	—	74324	9	Water Resources	Fourth, the DEIS fails to demonstrate adequate analysis of how water resources protected by ANILCA purposes for the Arctic Refuge will be protected under any oil and gas leasing alternatives	The Draft EIS discusses the Lease Stipulations and ROPs that will be required based on each alternative that specifically protects water resources. Further discussion has been added to the impacts for each alternative.
184.	Nancy	Waterman	—	56488	3	Water Resources	BLM must list all potential water sources and thoroughly analyze potential impacts to aquatic and riverine systems - localized and downstream - and impacts on resources dependent on those systems and must do so in accordance with the refuge purpose to ensure water quality and quantity within the refuge.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
185.	Brook	Brisson	Trustees for Alaska	98271	4	Water Resources	No information is provided on stream thermal regimes, which is essential and necessary baseline information needed to quantify impacts of habitat alteration, outlined within the DEIS (Appendix B, B-17). Baseline information on temperatures for Sadlerochit Springs and other springs in or upstream from Coastal Plain rivers is lacking in the draft EIS, yet changes could impact unique plants and habitat use by the American dipper, other birds, and fish. Changes in spring water temperature and volumes could also affect formation and melting of aufeis. ⁸⁷³	Further discussion has been added to alternative impacts.
186.	Withheld	Withheld	Kachemak Bay Conservation Society	72060	8	Water Resources	Nowhere does the application come out and state how much water will be used for drilling and operation. This estimate must be clarified in the final EIS.	The Draft EIS estimates that drilling one well requires 420,000 to 1.9 million gallons of water. Each action alternative has at least 17 'satellite pads' and 1 anchor pad (Vol. 2, Table B-5)

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187.	Lisa	Baraff	Northern Alaska Environmental Center	74306	14	Water Resources	The DEIS fails to adequately determine how much water will be required for exploration and development. Analysis of information within the DEIS conducted by the Center for American Progress indicates that the volume required is staggering and clearly significant. For example, the DEIS estimates that drilling one well requires 420,000 to 1.9 million gallons of water. Each action alternative has at least 17 'satellite pads' and 1 anchor pad (Vol. 2, Table B-5), and an estimated 30 wells will be drilled from the average pad (Vol. 2, B-17). Drilling 540 wells would, therefore, require between 227 million and 1 billion gallons of water. In addition, every mile of ice road requires 1 million gallons of water (Vol. 2, B-13), each ice pad requires 500,000 gallons of water (B-12), and daily production of 50,000 barrels of oil would require 2 million gallons of water per day. Water availability and impacts of water withdrawal is significant concern, requiring more thorough consideration. In their comments on the NOI, US Fish and Wildlife Service emphasized concerns about the "cumulative impacts of all stages of oil and gas development" on water: "Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife." In an internal memo at the Department of Interior, released by Public Employees for Environmental Responsibility (PEER) on March 12, 2019, USFWS, BLM and USGS scientists conclude there are significant information gaps and more studies are needed to conduct a real scientific analysis of potential impacts. These gaps include things as basic as, "characteriz[ing] seasonality in water quantity and quality to allow for science-informed NEPA processes and	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
187. (cont.)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	development of BMPs and permitting stipulations that ensure protection of fish and wildlife habitat and account for cumulative impacts of climate change," amongst others.	(see above)
188.	Brook	Brisson	Trustees for Alaska	96981	136	Water Resources	BLM does not analyze how using snow for oil and gas activities, like snow roads, or ice from lakes for ice chipping for road, will impact the recharge rate of the water resources on the Coastal Plain, changes to the water quality of remaining water, and risks from scraping or mining ice which may cause lakes to freeze to the bottom resulting in mortality of fish and benthic organisms. As the FWS notes, temporal and spatial data on the water resources of the Coastal Plain is limited. ⁸⁷¹ Additionally, data on precipitation is not tied to information on water resources. ⁸⁷² This means that BLM's conclusions tying these two pieces together as they may relate to recharge rates are not supported. It is critically important to understand the impact to recharge rates given the limited fresh water resources on the Coastal Plain overall and the specific Refuge purpose of protecting water quantity. Without correlated data, BLM cannot do this.	Further analysis of impacts to each Alternative have been included in the EIS using additional references including precipitation and snow depth data.
189.	Brook	Brisson	Trustees for Alaska	98271	18	Water Resources	Despite the high volume of water needed to support BLM's proposed oil and gas program, and the limited water available in winter from a very limited geographic area to do so, BLM concludes that there are not expected to be impacts on water quantity from water withdrawals, relying only on its analysis for the NPRA. ⁸⁸⁵ However, BLM does not explain or support this conclusion, particularly in light of its recognition that the hydrology and water regime is very different in the NPRA from the Coastal Plain. ⁸⁸⁶ This conclusion is also at odds with DOI's conclusion in 1987 that industrial use of water resources would be a major effect.	Further analysis of impacts to each Alternative is included in the EIS. Although the water regime maybe different from the NPR-A the oil and gas activities conducted would be similar to those conducted on the Arctic Refuge Coastal Plain.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
190.	Withheld	Withheld	World Wildlife Fund	75613	1	Water Resources	BLM does not adequately address several major impacts that will be felt across the coastal plain such as the massive volume of water that industry will withdraw from the scarce water resources on the Arctic Refuge Coastal Plain.	Further discussion has been added to alternative impacts.
191.	James	Warren	—	18479	6	Water Resources	While the Draft EIS gives useful information on hydrology and water resources in the Coastal Plain of the Arctic Refuge, it does not adequately address the usage of water in the various activities that will be undertaken under the leasing proposed. One of the specific purposes of the Arctic National Wildlife Refuge as established in ANILCA is to ensure "water quality and necessary water quantity within the refuge" to conserve fish, wildlife and habitats. The Draft EIS must demonstrate adherence to ANILCA and show how the lease sale will not negatively impact water quality and quantity.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. All action alternatives are designed to meet the purpose and need, and to account for all purposes of the Arctic National Wildlife Refuge. Additional text has been added to discuss mitigation in the alternatives discussion.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
192.	James	Warren	—	18479	8	Water Resources	The Draft EIS avoids providing a clear estimate of how much water will be required, but the figure is staggering. The Draft EIS estimates that drilling each well requires 420,000 to 1.9 million gallons of water. All of the alternatives have at least 17 'satellite pads' and 1 anchor pad. (Volume 2, Table B-5). The Draft EIS estimates that 30 wells will be drilled from the average pad (Volume 2, B-17). So at least 540 wells would be drilled, requiring a total of between 227 million and 1 billion gallons of water just to drill the wells. In addition, every mile of ice road requires 1 million gallons of water (Vol. 2, B-13), each ice pad requires 500,000 gallons of water (B-12), and daily production of 50,000 barrels of oil would require 2 million gallons of water per day. What will the impact of these requirements be? What release of waste water will take place, and how? Where will all this water even come from? In their comments on the Notice of Intent, US Fish and Wildlife Service emphasized concerns about the "cumulative impacts of all stages of oil and gas development" on water: "Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife." Clearly, we need a much more thorough analysis and assessment of potential impacts, direct and indirect, on water resources.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
193.	Molly	McKinley	—	28083	1	Water Resources	The DEIS addresses required volumes of water that will be required for the project but lacks adequate analysis about how this drawdown will impact water resources in the impacted areas.	Further analysis of impacts to each Alternative have been included in the EIS including those specific impacts related to potential drawdown of water resources.

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194.	Molly	McKinley	—	28083	2	Water Resources	analysis of water use should also speak to the latest research about how the specific proposed levels of water use and specific proposed physical changes to the landscape stand to impact cumulatively impact permafrost across the leasing area.	Additional references of baseline data for streams has been located and will has been incorporated in the EIS.
195.	Craig	Mishler	—	31305	5	Water Resources	it fails to quantify the total water needs of development, identify where the water will come from, or address how using this scarce resource would impact fish, habitat, vegetation, and the hydrology of the region.	Further discussion has been added to alternative impacts.
196.	Withheld	Withheld	—	48698	1	Water Resources	A clear portrayal of the water usage required by these development options is lacking. Each option should include a complete breakdown of water usage by both source and use type, including seasonal usage such as ice roads. An ecological assessment of the impacts of water drawdown and use must also be included.	This Leasing EIS will not result in the authorization of any on-the-ground activities. Accordingly, the environmental baseline will be preserved throughout the lease sale process. Any on-the-ground activities will require additional NEPA analysis. At that time, the BLM will determine which baseline studies may be necessary.
197.	Pamela	Mayne	—	54228	1	Water Resources	The Arctic Refuge coastal plain is essentially a cold desert, and little water is available. The DEIS fails to say from where water will be drawn, and how that withdraw will impact available water on the coastal plain for rivers, recreation, and fish and wildlife resources.	Further analysis of impacts to each Alternative have been included in the EIS while using the available information in ROP 9 to determine the ability to withdraw water.
198.	Kathryn	Larkin	—	55847	2	Water Resources	The draft EIS acknowledges that drilling an oil well could use as much as two million gallons of water and that constructing a mile of ice road would require one million gallons of water, but it fails to quantify the total water needs of development, identify where the water will come from, or address how using this scarce resource would impact fish, habitat, vegetation, and the hydrology of the region	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
199.	Kathleen	Miller	—	69335	1	Water Resources	The draft EIS acknowledges that drilling an oil well could use nearly 2 million gallons of water, but it fails to add up these impacts in a meaningful way to understand their impact. It also fails to fully add up these impacts in a meaningful way to understand their impact. It also fails to fully evaluate the impacts to fish, habitat, vegetation, and hydrology from using these water resources for oil and gas development.	Further discussion has been added to alternative impacts.
200.	Richard	Edwards	—	74281	20	Water Resources	The Draft EIS estimates the amount of water needed for the construction of typical facilities (e.g., 2MM gallons for a mile of ice road, 0.5MM gallons for one ice pad, up to 1.9MM gallons to drill one well, etc.). However, nowhere in the document is the total consumptive use of construction activities actually estimated and those results analyzed with respect to potential impacts on hydrologic function and Coastal Plain fish and wildlife habitat.	Further discussion has been added to alternative impacts.
201.	Richard	Edwards	—	74281	26	Water Resources	The Draft EIS later acknowledges a resource commitment that cannot be reversed or recovered would be: "Surface water consumption for drilling and other industrial purposes with wastewater disposal via underground injection." (Section 3.7 Irreversible and Irrecoverable Commitments of Resources, page 3-248). Yet, the Draft EIS fails to adequately address the direct, indirect and cumulative impacts of proposed activities on both water quality and quantity---especially over time. The analysis of consumptive use in the Water Resources section is particularly inadequate in its failure to fully characterize the potential impacts of proposed development activities.	Further discussion has been added to alternative impacts.
202.	Withheld	Withheld	—	75145	9	Water Resources	The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge.	The Draft EIS estimates that drilling one well requires 420,000 to 1.9 million gallons of water. Each action alternative has at least 17 'satellite pads' and 1 anchor pad (Vol. 2, Table B-5)

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
203.	Withheld	Withheld	—	75705	3	Water Resources	For example, Water: One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water in this Refuge which has] few fresh water sources, especially in winter. The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
204.	Withheld	Withheld	—	75705	4	Water Resources	The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology.	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
205.	Withheld	Withheld	—	77461	1	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water in this Refuge which has few fresh water sources, especially in winter. The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge, therefore the information and assessment is incomplete.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
206.	Withheld	Withheld	—	77891	6	Water Resources	One of the specific purposes of the Arctic National Wildlife Refuge is to “protect water quality and necessary water quantity.” The DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water in this Refuge which has few fresh water sources, especially in winter. The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge. In their comments on the Notice of Intent, Fish and Wildlife Service, which administers the Arctic National Wildlife Refuge, stated, “Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife.” The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology,	Further discussion has been added to alternative impacts.
207.	Withheld	Withheld	—	80022	3	Water Resources	2. The draft EIS does not provide a clear estimate for how much water will be required during future oil and gas development, which is important due to the fact that fresh water on the coastal plain of the refuge is especially scarce. How will seismic testing and future oil and gas development impact fresh water resources? Where will water be sourced for the creation of an ice road, for drilling wells, and field camps? Removal of water from the region could have significant negative impacts on the populations and habitats of fish and wildlife in the coastal plain. These impacts need to be clearly analyzed and discussed in the DEIS.	Further discussion has been added to alternative impacts.

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208.	Harold	Spence	—	84230	4	Water Resources	Oil and gas production constitutes a direct and well-understood threat to water and air resources. Operations would be expected to use millions of gallons of water that is often in short supply in winter. The Draft EIS is not clear how much water would be used nor how this would affect the refuge. Furthermore, while it claims operations would be “unlikely” to exceed air quality standards, there is no real analytics supporting that conclusion. The Draft did not quantify pollution emissions nor did it assess the air quality impacts of oil and gas development. Again, the rushed process has produced an inadequate Draft EIS document, which violates not only the spirit of the law, but its letter, too.	Further discussion has been added to alternative impacts.
209.	Terry	Reichardt	—	90939	4	Water Resources	Impacts on water resources seemed to be mostly missing. This is an extremely important topic as oil and gas development uses large quantities of this resource.	Further discussion has been added to alternative impacts.
210.	Janee	Middlesworth	—	91927	5	Water Resources	Fresh water is relatively limited on the Refuge and the DEIS does not assess the impacts that industry's water use will have on fish and wildlife.	Further discussion has been added to alternative impacts.
211.	Ruth	Wood	—	92475	13	Water Resources	water use need to be studied, explicitly stated, and BLM must say how they will fulfill the purpose “to ensure water quality and necessary water quantity within the refuge.”	Further discussion has been added to alternative impacts.
212.	Barbara	Nabors	—	93673	3	Water Resources	The EIS must address how the massive water use required for the refuge will be met without impacting Arctic Refuge scarce water resources, and therefore, plant and animal life.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
213.	Karen	Bollinger	—	94054	5	Water Resources	The DEIS avoids providing a clear estimate of how much water will be required, but if you piece together the information in the document, the figure is staggering. Center for American Progress did this and found that: o The DEIS estimates that drilling each well requires 420,000 to 1.9 million gallons of water. All of the alternatives have at least 17 'satellite pads' and 1 anchor pad. (Volume 2, Table B-5). And the DEIS estimates that 30 wells will be drilled from the average pad (Volume 2, B-17). So at least 540 wells would be drilled, requiring a total of between 227 million and 1 billion gallons of water just to drill the wells. o PLUS, every mile of ice road requires 1 million gallons of water (Vol. 2, B-13), each ice pad requires 500,000 gallons of water (B-12), and daily production of 50,000 barrels of oil would require 2 million gallons of water per day.	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
214.	Sarah	Keller	—	94078	2	Water Resources	Also as a biologist, I am aware of the importance of water for wildlife, birds as well as all other natural residents of the coastal plain in ANWR. Both the quality and quantity of water are important to survival and successful rearing of young. The provision of water is one of the specific purposes of the establishment of the Arctic National Wildlife Refuge. Where is the analysis in the DEIS of how much water will be required and how it will be used by all stages of oil and gas development? How is that documented? Where are the comments and concerns by agencies such as the US Fish and Wildlife Service incorporated in the discussion of water use?	Further discussion has been added to alternative impacts.

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215.	Withheld	Withheld	—	94435	4	Water Resources	The DEIS does not clearly depict how much water oil and gas activities could use and how this will affect the Arctic Refuge. In their comments on the Notice of Intent, Fish and Wildlife Service, which administers the Arctic National Wildlife Refuge, stated, "Water withdrawals from the streams, rivers and springs could have significant and detrimental implications to the populations and habitats of fish and wildlife." The DEIS failed to fully evaluate the impacts of oil and gas development on the already scarce water resources and the effects on fish, habitat, vegetation, and hydrology.	Further discussion has been added to alternative impacts.
216.	Valerie	Kuntz	—	95025	1	Water Resources	How much water will be needed for oil and gas development and where will it come from? When the Arctic National Wildlife Refuge (ANWR) was first established, one of its specific purposes was to ensure "water quality and necessary water quantity within the refuge" to conserve fish, wildlife and habitats. This DEIS must demonstrate adherence to that purpose and show how lease sales will not negatively impact water quality and quantity. The DEIS seems to avoid providing clear estimates on how much water will be required for drilling wells. "Drilling and completing each potential well would require anywhere from 420,000 to 1.9 million gallons of water" (Vol. 2, B-17). All of the alternatives have at least 17 "satellite pads" and 1 anchor pad (Vol. 2, Table B-5). The DEIS estimates that 30 wells will be drilled from the average pad (Vol. 2, B-17). That means at least 540 wells would be drilled, which would require between 227 million and 1 billion gallons of water just to drill the wells! And then, "a field with a daily production rate of 50,000 barrels of oil per day would require approximately 2 million gallons of water per day" (Vol. 2, B-17).	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
217.	Withheld	Withheld	—	96175	7	Water Resources	The EIS seems to avoid providing clear estimates on how much water will be required for drilling wells. "Drilling and completing each potential well would require anywhere from 420,000 to 1.9 million gallons of water" (Vol. 2, B-17). All of the alternatives have at least 17 "satellite pads" and 1 anchor pad (Vol. 2, Table B-5). The DEIS estimates that 30 wells will be drilled from the average pad (Vol. 2, B-17). That means at least 540 wells would be drilled, which would require between 227 million and 1 billion gallons of water just to drill the wells! And then, "a field with a daily production rate of 50,000 barrels of oil per day would require approximately 2 million gallons of water per day" (Vol. 2, B-17).	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
218.	Greta	Burkart	—	96243	15	Water Resources	The draft EIS notes that estimates of water use have been presented in the literature (e.g. See NRC 2003 estimates of water use by Conoco to be one-fourth of a billion gallons per year), but the EIS does not present any projected water use estimates in the EIS. It is only noted that "project-specific" estimates would be more accurate. By not including these published estimates of total estimated water use, it is even more difficult for the public to grasp the magnitude and severity of water withdrawal impacts in the 1002 Area of the Arctic Refuge. Also, not included in the analysis are the best available data for estimating winter water availability in the Arctic Refuge 1002 Area (See Trawicki reports from the 1990s).	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
219.	Greta	Burkart	—	96243	73	Water Resources	F.4.10 Water Resources Comments “Water withdrawal from lakes or streams for ice roads, water supply, dust suppression, and other uses” should be changed to “Water withdrawal from lakes for ice roads, water supply, dust suppression, and other uses”. Withdraw from streams is not permitted and has been shown to have more severe impacts during winter.	Change has been made
220.	Greta	Burkart	—	96243	99	Water Resources	There is a need for a more rigorous analyses of potential development scenarios that include a much better assessment of the feasibility of using freshwater resources versus using groundwater versus using an STP. This information is necessary to develop an appropriate analysis of the impacts of development on water resources, fish, other aquatic species, etc. Without this information, the analyses cannot adequately address impacts under different alternatives.	Further discussion has been added to alternative impacts.
221.	Greta	Burkart	—	96243	100	Water Resources	Total projected water use should be presented under development scenarios. It is expected that water use could increase greatly under alternative B. It is not possible to adequately conduct analyses of the impacts of development on water resources, fish, other aquatic species, and birds without detailed projections of water use under any of the alternatives.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
222.	Susan	Smith	—	97752	1	Water Resources	I am concerned about the volume of water needed for drilling and to build ice roads and ice pads. It could be up to a billion gallons for drilling, depending on the number of wells, and millions of gallons for ice roads. The eastern Coastal Plain, is relatively dry. Many people do not know that northern Alaska is classified as a desert climate. The wildlife this Refuge is designed to protect, birds, fish, and mammals, require adequate water to survive. The EIS does not seem to address this issue. Moreover, what will happen to surface soils when the water table is depleted?	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
223.	Jenna	Jonas	—	97882	3	Water Resources	Oil and gas development is water-intensive. It will require the diversion of water and construction of ice roads. I work as a wilderness guide floating the rivers that cross the Coastal Plain and know from experience that water on the Coastal Plain of the is particularly scarce. There are few open lakes and rivers and very little water available. The BLM does no new analysis of how much water is actually available on the Coastal Plain and therefore does an insufficient job of analyzing impact to that water quantity.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
224.	Jenna	Jonas	—	97882	4	Water Resources	The DEIS estimates that drilling each well requires 420,000 to 1.9 million gallons of water. All of the alternatives have at least 17 'satellite pads' and 1 anchor pad. (Volume 2, Table B-5). And the DEIS estimates that 30 wells will be drilled from the average pad (Volume 2, B-17). So at least 540 wells would be drilled, requiring a total of between 227 million and 1 billion gallons of water just to drill the wells. In addition, every mile of ice road requires 1 million gallons of water (Vol. 2, B-13), each ice pad requires 500,000 gallons of water (B-12), and daily production of 50,000 barrels of oil would require 2 million gallons of water per day. All this in an area that receives less than 5 inches of water annually. The DEIS does not meet the requirement to ensure water quality and quantity.	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
225.	Rose Ann	Witt	—	98060	2	Water Resources	resh water is relatively limited on the Refuge Coastal Plain, however the DEI docs not adequately assess the impacts that industry's water use would have on fish and wildlife.	Further discussion has been added to alternative impacts.
226.	Tim	Whitehouse	PEER	95601	129	Water Resources	Assessments of the adverse impacts of water withdrawal on lake biota in the NPR-A are necessary to assess the efficacy of existing BMPs	Further discussion has been added to alternative impacts.
227.	Harry K.	Brower Jr.	North Slope Borough	95612	33	Water Resources	The Borough suggests that BLM provide additional analysis to support its conclusion that, under all action alternatives, there are no anticipated potential long-term effects on lakes and ponds from ice roads, ice pads, or ice bridges, and that there is adequate water for withdrawal.	Further discussion has been added to alternative impacts.

Row #	First Name	Last Name	Organization Name	Letter #	Comment #	Comment Code Name	Comment Text	Response
228.	Richard	Edwards	—	74281	21	Water Resources	The Draft EIS also estimates the amount of water needed for oil production once facilities are in place (e.g., 2 MM gallons per day for production of 50,000 barrels of oil--- from a single field not at peak production). Once again, nowhere in the document are the total water needs estimated and those results analyzed with respect to potential impacts on hydrologic function and Coastal Plain fish and wildlife habitat.	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
229.	Richard	Edwards	—	74281	27	Water Resources	The Draft EIS is wholly deficient in its lack of any Hypothetical Water Use Scenarios to match the detail provided in Appendix B (Hypothetical Development Scenario). The document must be revised, to include quantitative analyses of water availability and projected consumptive use in order to provide the Responsible Official with sufficient information relative to critical water resources on the Coastal Plain.	While the hypothetical development scenario does give some quantities of water that might be needed for development, site specific analysis would be required for a site-specific project.

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230.	Sarah	James	—	98099	3	Water Resources	Ice road they said for winter when they go and do that development. There is not enough freshwater. There is ocean water, but that's saltwater. There is a mountain right here. Coastal plain right here [indicating]. There is not enough freshwater for ice road. Where you going to get it? And if there is oil spill, it will melt back into the tundra. There is no technology in the world will clean up oil spill from tundra. We talk about protection. We want permanent protection. I hear that from everybody. I hear we have three -- four option maybe. Yeah, but we -- there is four alternatives, the one that they show earlier, but they don't show the first alternative. That's no development. No action. That's what we want.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
231.	Withheld	Withheld	—	72087	2	Water Resources	The risks of oil spills are dramatically under-stated. The DEIS avoids providing a clear estimate of how much water will be required, but if you piece together the information in the document, the figure is staggering. Drilling will consume more than one billion gallons of water... water that is scarce.	Further discussion has been added to alternative impacts.

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232.	Jason	Paulsen	—	74312	5	Water Resources	In my review of the EIS, I find that it fails to honestly analyze the cumulative impacts that development of the Coastal Plain with respect to the water resources necessary to support commercial oil exploration and drilling. Water is the lifeblood of all life in the Arctic, and I am concerned that your analysis simply assumes that the water will “be there” for industrial-scale exploration without taking time to study, understand and properly analyze the impacts (even at a macro scale) that use of this water will have upon both the landscape and hydrology of the Coastal Plain, and the plants and animals who call it home.	Further discussion has been added to alternative impacts.
233.	Lin	Davis	—	75891	9	Water Resources	Water Quality: the DEIS has not adequately dealt with impacts to water. According to Alaskan scientists who have studied the DEIS, there are special concerns about water quality in ANWR. Different from Western Alaska, water is scarce in the Coastal Plain especially in winter. Ice roads require a lot of water, a million gallons for every mile. Each well requires 500,000 to 1.9 million gallons of water, and each pad will drill 30 wells. Likely 540 wells will be drilled in the 1002, and the US Fish and Wildlife Service has lodged concerns about the cumulative effects of all stages of oil/gas development on the streams, rivers, springs and therefore detrimental all habitats of fish and wildlife. The DEIS has not thoroughly considered these significant impacts. The Refuge designation of AIWR through ANILCA specified that water quality and water quantity be protected as a way to conserve wildlife and fish. The lease sale very likely cannot adhere to ANILCA. The DEIS likely fails this legal requirement.	The Refuge's water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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234.	Anne	Fuller	—	80944	1	Water Resources	I am concerned about the failure of the DEIS to help fulfill one of the purposes of the refuge. It is the law that the refuge exists “to ensure water quality and necessary water quantity”. In this fragile ecosystem, water is determining factor in conditions necessary for wildlife (nesting birds, caribou, and more). The DEIS analysis is lacking analysis of the direct and cumulative impacts on birds throughout the weeks they spend in the area. While the DEIS acknowledged that drilling an oil well could use 2 million gallons of water and each mile of ice road uses 1 million gallons of water, it does not describe how this water usage will affect the plants and animals.	The Refuge’s water quality and quantity purpose in ANILCA does not preclude consumptive uses of water. ROPs 8 and 9 require water withdrawals to be conducted in such a manner as to maintain natural hydrologic regimes in order to conserve fish and wildlife and their habitats. Table H-5 and H-6 indicate the volumes of water availability from rivers and lakes. It is noted that e.g., the Tamayariak River total annual runoff varies 40,000 to 100,000 acre-feet per year. One mile of ice road construction (1,000,000 gallons) is equivalent to 3 acre-feet of water. Further analysis of impacts to each Alternative is included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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235.	Withheld	Withheld	—	81307	1	Water Resources	One of the goals of the Arctic Refuge, the 1002 area included, is to protect water quality and quantity. The DEIS again falls short. The questions that I don't see addressed in the DEIS are How much water will be required for drilling pads, ice roads, drilling operations and other exploration and development operations? How are these requirements allocated by the season of the year? How much water must be left in a water body (flows in streams and rivers; levels in lakes and ponds) in order to maintain natural function of the water body in terms of both quantity and quality, not to alter the hydrology, avoid erosion, and continue to provide unimpaired habitat for fish and wildlife? How do seasonal and year-to-year fluctuations of water levels and flow factor in to water allowable water usage? How much water over and above these flows and levels is available to meet the demands of oil and gas development? If the DEIS doesn't rigorously study, analyze, and answer these questions, the DEIS can't possibly protect the resource	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.

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236.	Amy	Gulick	—	94077	3	Water Resources	3) Water is scarce on the Coastal Plain of the Arctic Refuge, and ANILCA requires that there is enough water in the Arctic Refuge to ensure "water quality and necessary water quantity with the refuge" to conserve fish, wildlife and habitats. The draft EIS must demonstrate adherence and that the lease sale will not negatively impact water quality and quantity, and yet the draft EIS avoids providing a clear estimate of how much water will be required for oil and gas development. However, the Center for American Progress did an analysis based on information in the EIS and found that: ? The DEIS estimates that drilling each well requires 420,000 to 1.9 million gallons of water. All of the alternatives have at least 17 'satellite pads' and 1 anchor pad. (Volume 2 , Table B-5). And the DEIS estimates that 30 wells will be drilled from the average pad (Volume 2 , B-17). So at least 540 wells would be drilled, requiring a total of between 227 million and 1 billion gallons of water just to drill the wells. ? In addition, every mile of ice road requires 1 million gallons of water (Vol. 2 , B-13), each ice pad requires 500,000 gallons of water (B-12), and daily production of 50,000 barrels of oil would require 2 million gallons of water per day.	Further analysis of impacts to each Alternative have been included in the EIS. While analysis of potential impacts will occur in this EIS it also must be noted that for any future development to occur the stipulations and ROPs in the lease sale would require future analysis of water use, water sources, and how much water would be allowed to be withdrawn from the source.
237.	Charlotte	Fremaux	—	93091	6	Water Resources	5. -FAILS- To acknowledge both the scarcity of fresh water resources in the area, and to assess the impact of industry use of that resource. All species need fresh water, so reducing the available clean water stores is directly threatening to all life. Industrial activity will use precious water and pollute what it uses, making it toxic and unavailable for all life.	The quantity of water is discussed in the Draft EIS. The impact of industry use is based on current activities on the North Slope and the impacts due to these activities.

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238.	Withheld	Withheld	Alaska Wilderness League	81382	5	Water Resources	(i) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge. (P.L. 96-487, Section 303(2)(B); 16 U.S.C. § 688dd.) The draft EIS omits critical information about the impacts of the proposed development on water quality and water quantity within the Arctic Refuge, precluding adequate analysis. In Appendix H on water resources, BLM presents baseline trends for water resources and precipitation from Toolik Lake and Kuparuk, two areas wholly outside the Arctic Refuge. Data on program-specific amounts of precipitation for water availability to make ice roads, and still support fish and wildlife, and snow cover depth required to avoid permanent damage to the tundra by vehicles and to polar bear dens, is vital information missing from the draft EIS. Furthermore, the draft EIS fails to adequately consider the adverse impacts of gravel mining on hydrology and on wildlife, including, for example, the impacts of gravel mining on braided river channels used by shorebirds in the NW Coastal Plain. BLM also fails to consider foreseeable adverse impacts of potential gravel mining on neighboring ASRC lands outside of the Refuge, which may have severe sound and other environmental impacts on water quantity and quality within the Refuge.	Further discussion has been added to alternative impacts.

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239.	Brook	Brisson	Trustees for Alaska	98271	7	Water Resources	BLM fails to analyze the full scope of methods for obtaining water in light of the paucity of deep lakes compared with North Slope development areas to the west of the Coastal Plain. It fails to address the impacts of so-called "innovative techniques to minimize use of freshwater sources" or identify any additional potential water sources "including naturally deep lakes and pools along rivers" beyond those lakes FWS studies have documented to have limited available water beyond that needed by fish and wildlife.	Further analysis of impacts to each Alternative have been included in the EIS. While the water rights reserved by USFWS are undetermined, the locations of those reservations can further allow for the discussion of impacts.
240.	Greta	Burkart	—	96243	74	Water Resources	F.4.10 Water Resources Comments Fish mortality should be included in the list of impacts that could occur due to loss of aquatic habitat. See Cott et al 2008 studies of lakes in the Canadian Arctic. The withdrawal volumes in these studies were similar to the withdrawal volumes proposed in the ROPs. There are studies in the NPRA; however, the volume of water removed was only a small fraction of the permitted volume and many of the studies were conducted in deep water gravel pits that are not representative of lakes in the 1002 Area.	Further discussion has been added to alternative impacts.
241.	Bruce	Campbell	—	57153	2	Water Resources	I note under Alternative B that it seems to pat itself on the back for not proposing permanent oil and gas infrastructure - including roads and pipelines - for ten major rivers. However, there needs to be details of how much damage (including permanent damage) would be done by temporary operations within those key watersheds.	Further discussion has been added to alternative impacts.

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