

would be handled on a case-by-case basis, and would be subject to Required Operating Procedures and Stipulations (Appendix A) and constraints developed through project-specific NEPA analysis.

Rights-of-Way. This Alternative anticipates the most applications for rights-of-way associated with resource development activities. These would include roads or pipelines associated with mineral development. Effects to wildlife from these activities are described under “Effects Common to All Alternatives”. More effects to wildlife from rights-of-way would be expected under this Alternative than under Alternatives A, C, or D.

(2) Effects to Wildlife from Leasable, Locatable, and Salable Minerals (Alternative B)

Fluid Leasable Minerals

Under Alternative B, ANCSA 17(d)(1) withdrawals would be revoked. Because of the constraints currently in place under these withdrawals, removal of the withdrawals could increase resource development and wildlife and habitat disturbing activities. This analysis assumes the development of one gas field in the Koggiling Block, six exploratory wells (each disturbing approximately six acres) and one seismic survey would occur every five years covering 63 linear miles with a total of 250 miles collected, over the next 20 years. Impacts to wildlife from leasable minerals development could come from several activities:

Seismic Exploration. Seismic exploration would have direct impacts on wildlife, including temporary disturbance or stress on wildlife. In one study, seismic activities within 1.15 miles of a grizzly bear den caused changes in heart rate and movement of the female bear and cubs (Reynolds et al. 1986). The investigators suggest that seismic testing activities within approximately 600 feet of the den may cause abandonment of the den.

For approximately the past 15 years, the Mulchatna Caribou Herd has been inconsistent and unpredictable in its choice of overwintering and calving areas within the larger herd range (Hinkes et al. 2005). In spring 2006, there were two large calving groups, one located near Lime Village and the other located south of Koliganek in a generalized area that includes BLM lands. Planning for seismic exploration on BLM lands in the planning area for a time when caribou are not present could prove challenging with such unpredictable behavior (Appendix A, ROP FW-3b).

The National Research Council's report, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope (2003), suggests that the optimum time to conduct seismic activities in caribou winter range and primary calving areas is in summer when caribou are not present. However, even in winter on winter range, the Committee believed that direct effects on caribou in the National Petroleum Reserve – Alaska in the 1970s and 1980s from low intensity two-dimensional (2-D) surveys with low seismic line density were temporary and minor (NRC 2003). Wintering bands of caribou tend to be small and often widely dispersed, so few caribou would have come in contact with seismic activities at the same time. Additionally, Roby (1978, NRC 2003) suggests that caribou appear least sensitive to human induced disturbance during winter.

Dyer and others (2001) suggest that avoidance of seismic lines and the attendant human activity could reduce caribou's ability to avoid areas of deep snow. Bradshaw and others (1998) propose that the energy costs of multiple encounters with seismic disturbance could increase winter weight loss and reduce calf production and survival (NRC 2003). Under Alternative B, Oil and Gas Lease Stipulations 5 and 6 (Appendix A) would not apply. These Stipulations provide for timing constraints on oil and gas exploration and development activities, including seismic work. Without the application of these timing constraints, the effects described above could be more pronounced under this Alternative.

Information about the effects of noise on moose was gathered for the Mackenzie Gas Project in Canada (AMEC 2005). In a 1974 study recording the response of moose in the Richardson Mountains to fixed-wing aircraft, McCourt and others found that of 46 observations, moose reacted visibly to aircraft overflights of less than 60 meters of altitude 55% of the time, and to overflights of 60 meters to 180

meters 37.5% of the time. Moose are known to avoid roads, pipelines and seismic lines (Horesji 1979, Rolley and Keith 1980, Morgantini 1984, Rudd and Irwin 1985, Singer and Beattie 1986, Jalkotzy et al. 1997). Horesji (1979) also reported that moose were less likely to be found within 1 km of seismic lines while seismic operations were underway.

Based on data from prior studies, caribou, moose, and bears can all be hazed away from their habitats by seismic testing. The following factors would be essential in the degree of effects:

- The timing and location of tests and whether caribou, moose, or bears are present or absent.
- The number of seismic lines involved, the amount of temporary infrastructure developed, and the amount of ancillary human activity accompanying the testing, including helicopter activities.
- The total duration and intensity of the project or cumulative projects in a specific area.
- The type of testing, subsurface or above ground; 2-D or 3-D procedures.

Seismic camps may provide additional food sources for foxes and bears at dumpster sites near the galley and dining halls and at dump sites (Eberhardt et al. 1982, Rodrigues et al. 1994). However, seismic crews are required by to incinerate and remove waste materials from BLM lands (Appendix A, Section D). This activity is not expected to enhance the survival of foxes. Bears would generally be hibernating during seismic exploration because it is carried out in winter, and would not be expected to be affected by human sources of food. Testing by helicopter-supported ground crews could easily be done in summer months (which has been the case in the past) and so would also be expected not to be a source of impacts.

Small mammals (lemmings, voles) and their predators would be affected locally at camps and along seismic lines by direct mortality and loss of habitat. The numbers lost would be insignificant in the greater population.

Should seismic surveys occur during winter months, many birds are absent from the region. Overwintering birds, including ravens, ptarmigan, and gyrfalcons, could be temporarily displaced by seismic activities. In the unlikely event that a seismic operation extended into May, disturbance of early breeding season activities of some species could occur. Because the campsites and survey areas are occupied for relatively brief periods and most of the birds are dispersed in relatively low numbers over a large area, the duration of disturbance incidents is likely to be brief and infrequent. Stipulations, Required Operating Procedures, and project-specific requirements such as those describing seasonal activities and buffers would minimize potential impacts.

Indirect impacts to wildlife from seismic operation may include degradation of habitat (impacts to soil and vegetation) due to seismic exploration. These types of impacts would be reduced by implementation of the Required Operating Procedures (Appendix A), including limiting seismic surveys to the winter when the ground is frozen and covered with snow.

Exploratory Drilling. Effects to wildlife from exploratory drilling for oil and gas would be similar to those discussed under seismic exploration. As exploratory drilling should occur during winter, potential disturbance would come primarily from aircraft, surface traffic, and activities associated with road and drill pad construction. Numerous studies show that wildlife such as caribou react to low flying aircraft by exhibiting various behaviors from panic to strong escape responses (Calef et al. 1976). Disturbance reactions to each incident with aircraft would be brief, lasting only minutes to less than one hour; however, effects of cumulative incidents must also be considered. Wildlife may be temporarily disturbed from ground traffic and activities associated with ice road construction. Wildlife may temporarily avoid the local area but would reoccupy the area after exploration activities were complete. Small and less mobile animals such as lemmings and voles may suffer direct mortality during ice road or pad construction. This analysis anticipates the drilling of six exploration wells over a 20 year period, each disturbing approximately six acres. Given the small scale of this development and small area of disturbance, the described impacts should not result in population level effects for any species.

Development. Under the Reasonably Foreseeable Development Scenario, one site in the Koggiling Creek planning block of BLM lands is explored and potentially developed for natural gas, and a pipeline is constructed to Dillingham. Using this scenario, the following effects could occur.

Although initial construction could occur primarily during winter, development of leasable mineral resources would bring year-round facilities and activities to wildlife habitat on BLM lands in the southern part of the Nushagak – Kvichak drainages. Potential effects of development activities include direct habitat loss for bears, caribou, moose, waterfowl, small mammals and their predators, and other animals from gravel extraction and oil field facilities. Indirect habitat loss may occur through (habitat fragmentation) reduced access caused by physical or behavioral barriers created by roads, pipelines, and other ancillary facilities, and by road and air traffic. Depending on location and season, leasable mineral activities could result in increased disturbance and mortality to individual animals from routine aircraft operations, gravel-extraction operations, presence of gravel pads and facilities, and associated improved human access for vehicle and foot traffic from both workers and the general public.

For example, the National Research Council (2003) found that intensive oil and gas development on the North Slope has altered the distribution of female caribou during the summer insect season, and that elsewhere a network of roads, pipelines, and facilities has interfered with caribou movements between coastal insect relief and inland feeding areas. Radio-collared female caribou west of the Sagavanirktok River shifted their calving concentration area from developed areas near the coast to undeveloped areas inland, to an area of lower green-plant biomass. During a six year period, parturition rates of radio-collared females in regular contact with oil-field infrastructure were lower than those of undisturbed females, exacerbated by intense insect harassment during the period. Possible consequences of these disturbances include reduced nutrient acquisition and retention throughout the calving and midsummer periods, poorer condition in autumn, and a lowered probability of producing a calf the following spring (NRC 2003). While these impacts have occurred on more intensive oil and gas development, this level of development is not predicted for BLM lands in this area, based on findings presented in the Reasonably Foreseeable Development Scenario for Fluid Minerals (BLM 2006).

Disturbance and stress impacts would be similar to those discussed under Seismic Exploration, but would be more extensive and long term due to yearlong exposure. Various species could be affected to some extent by disturbance events such as passage of aircraft, although most incidents are expected to result in negligible effects from which individuals would recover within hours to a day. However, the cumulative effect of repeated disturbance could extend for longer periods and potentially may adversely affect physiological condition, reproductive success, productivity, and the use of key seasonal and life function habitats.

Disturbance impacts to grizzly bears would be similar to those discussed under seismic impacts. A similar effect could occur from construction activities within 600 feet of dens. The National Research Council (2003) found that oil and gas activities on Alaska's North Slope had changed the demographics of the grizzly bear population. Harding and Nagy (1980) found that grizzly bears initially avoid human settlements because of the noise and disturbance, but if the area includes an important food source, some bears are likely to habituate to the noise and human presence, leading to an increase in encounters and mortalities.

Fox populations also increase, primarily because of the availability of human food sources. One concern is that increasing fox populations could affect regional populations of some bird species.

Development of infrastructure in the region may introduce injury or mortality factors such as vehicle collisions. Contaminated food, hydrogen sulfide gas poisoning, and other oil-development related sources could contribute to increased wildlife mortality. Defense of life and property mortality for brown bears could increase with increase in human residence and increased presence of human food.

Other effects on birds observed at other oil and gas sites in Alaska include shifts in nesting distribution of shorebirds and artificially high densities of ravens and gulls (NRC 2003).

Locatable Minerals. Under Alternative B, ANCSA 17(d)(1) withdrawals would be revoked and 1,102,489 acres of BLM land would be open to mineral entry. Dependent on gold prices, existing locatable mining operations may continue and a moderate increase in small placer operations on BLM lands could occur during the life of this plan. This analysis predicts a total of 115 acres of surface disturbance on BLM lands from locatable mineral activities for Alternative B (BLM 2006). Large operations could be possible, but would most likely occur on State or Native lands (BLM 2006). Roads or infrastructure necessary for those operations, however, could cross BLM lands.

Approximately 3,968 acres would remain withdrawn due to Agency withdrawals. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Existing mining operations and any future proposals for locatable mineral exploration and development would be subject to review and Required Operating Procedures (Appendix A). Measures to maintain the integrity of wildlife habitat in these areas would be implemented..

The Required Operating Procedures common to Alternatives B, C, and D are designed to minimize or prevent impacts to wildlife and wildlife habitats. Strict adherence to the ROPs would minimize effects to wildlife and wildlife habitat within the planning area. Effects described under "Effects Common to All Alternatives" would have a greater potential to occur under this Alternative than under Alternatives A and C.

Salable Minerals. If mineral material development occurred in support of leasable mineral activity, the effects would be similar to those described under "Effects Common to All Alternatives." This analysis anticipates little to no development of mineral material sites on BLM lands (BLM 2006).

(3) Effects to Wildlife from Recreation (Alternative B)

Under Alternative B, lands would be managed as Roaded Natural under the Recreation Opportunity Spectrum. This ROS setting is characterized by a generally natural environment with moderate evidence of sights and sounds from humans. Resource modification and utilization practices are evident and concentration of users can be moderate. Consequently, the effects to wildlife described under "Effects Common to All Alternatives" would occur to a greater degree than under Alternatives A, C, or D.

(4) Effects to Wildlife from Off-highway Vehicles (Alternative B)

Under Alternative B, all lands would be open to OHV use and there would be no route restrictions. Lack of restrictions in this Alternative would mean that cross country travel would be allowed everywhere on BLM lands within the planning area. An increase in habitat degradation would continue at the current rate due to unrestricted OHV access. Adverse impacts to fisheries resulting from OHVs crossings streambeds may impact terrestrial predators and scavengers by altering availability, seasonal abundance, and distribution of important fish-related food resources.

(5) Effects to Wildlife from Designations of Areas of Critical Environmental Concern (Alternative B)

There would be no ACECs designated under this Alternative. This would result in fewer constraints to resource development and more lands available to resource development.

(6) Effects to Wildlife from Wild and Scenic River Nominations (Alternative B)

Under Alternative B, there would be no Wild and Scenic River nominations and any ANCSA 17(d)(1) withdrawals associated with the rivers would be recommended for revocation. This would result in fewer constraints to resource development and more lands available to resource development.

d) Effects to Wildlife for Alternative C

(1) Effects to Wildlife from Reality and Lands Actions (Alternative C)

Land Exchanges. Impacts to wildlife from land exchanges and acquisitions would be the same as described for Alternative A.

Withdrawals. Under this alternative, ANCSA 17(d)(1) withdrawals would be maintained on proposed wild river segments on the Alagnak, Goodnews mainstem and Goodnews Middle Fork (12,210 acres) and within the Carter Spit ACEC (61,251 acres). This would be beneficial for wildlife habitat because it would prohibit mineral entry or leasing and potential mineral development.

Rights-of-Way. Impacts to wildlife from Rights-of-Way would be the same as described under "Effects Common to All Alternatives." However, the proposed Bristol Bay and Carter Spit ACECs would be identified as avoidance areas. This would provide additional protection to wildlife habitats by restricting Right-of-Way development which may degrade or fragment habitat.

(2) Effects to Wildlife from Leasable, Locatable, and Salable Minerals (Alternative C)

Leasable Minerals. Under Alternative C, ANCSA 17(d)(1) withdrawals would be revoked, opening 1,063,129 acres of BLM lands within the planning area to mineral entry. ANCSA 17(d)(1) withdrawals would be retained on eligible/suitable Wild Rivers (12,210 acres) including the Alagnak, Goodnews and Goodnews Middle Fork Rivers and within the proposed Carter Spit ACEC (61,251 acres). The retention of these withdrawals would prohibit mineral leasing within these areas. There would be No Surface Occupancy within 300 feet of the East and South Fork Arolik River, Faro Creek, South Fork Goodnews River and Klutuk Creek. This analysis predicts the development of one gas field in the Koggiling Creek planning block, six exploratory wells (each disturbing approximately six acres) and one seismic survey would occur every five years covering 63 linear miles with a total of 250 miles collected, over the next 20 years. Potential impacts to wildlife from such a development are the same as those discussed under Alternative B. However, under this alternative there is less land available for mineral leasing compared to Alternatives B or D.

Locatable Minerals. The effects to wildlife from locatable mineral activities would be the same as those in Alternative B, except segments of eligible/suitable Wild Rivers (12,210 acres) including the Alagnak, Goodnews and Goodnews Middle Fork Rivers of the Alagnak River, the mainstem of the Goodnews River, and the Goodnews Middle Fork, and the proposed Carter Spit ACEC, (61,251 acres) would retain ANCSA 17(d)(1) withdrawals precluding mineral entry in these areas. Conservation of these areas would benefit by protecting important habitats. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Under Alternative C, there is less land available for mineral leasing compared to Alternatives B or D.

Salable Minerals. Impacts to wildlife would be similar to those in Alternative B except the proposed Carter Spit ACEC, the proposed Bristol Bay ACEC, and segments of the Alagnak, Goodnews mainstem and Goodnews Middle Fork River proposed for Wild and Scenic River designation would be closed to salable mineral activities. The closure of the Bristol Bay ACEC would restrict salable mineral activities in conjunction with leasable mineral activities in the Koggiling Creek planning block. This Alternative would provide the highest protection to wildlife populations and habitat from salable mineral activities because less acreage would be available.

(3) Effects to Wildlife from Recreation (Alternative C)

Under Alternative C, the entire recreation area setting would be managed for ROS classes semi-primitive motorized. No facilities would be constructed and vegetation and soils are predominantly natural but

localized areas of disturbance may exist (Table 2.9). Impacts to wildlife would be the same as those described under Alternative A.

(4) Effects to Wildlife from Off-highway Vehicles (Alternative C)

Under Alternative C, all lands would receive a “limited” designation for OHV use, which would require vehicles to stay on existing trails whenever possible. A vehicle weight limit of 2000 pounds would be proposed. These restrictions would benefit wildlife by reducing the proliferation of trails and degradation of habitats, and would reduce the indirect impacts to wildlife created by noise and disturbance.

(5) Effects to Wildlife from Wild and Scenic Rivers Nominations (Alternative C)

Under Alternative C, segments of the Alagnak, Goodnews mainstem and Middle Fork Goodnews Rivers would be proposed for inclusion to the National WSR system. ANSCA 17(d)(1) withdrawals would be retained, closing these river corridors to mineral activities. These actions would be beneficial to wildlife by protecting riparian habitats from disturbance, from resource development activities, and by providing undisturbed wildlife habitats to riparian species. A Wild and Scenic River nomination or subsequent designation could have the effect of increasing visitation on the river. This could increase recreation impacts such as bank trampling, campsite impacts, and litter. Impacts to associated wildlife habitat would be very limited.

(6) Effects to Wildlife from designation of Areas of Critical Environmental Concern (Alternative C)

Under Alternative C, the Carter Spit ACEC (61,251 acres) and the Bristol Bay ACEC (974,970 acres) would be proposed. These designations would benefit wildlife habitat through the following actions:

- Requiring Plans of Operations for any mining operation, even those less than five acres.
- Managing the area as a rights-of-way avoidance area, thus avoiding potential impacts from road or pipeline construction.
- Seasonal constraints to protect the Steller's eider would be developed in the Carter Spit ACEC (Appendix A, ROP SS-1a).

Both ACECs will restrict salable mineral activities and be designated as rights-of-way avoidance areas providing additional protection to fisheries and aquatic habitat. Designating Right-of-Way avoidance areas in the proposed ACECs would provide protection to natural resources because road or pipeline construction would likely not occur. Potential impacts to wildlife, resulting from road or pipeline construction may include; removal of vegetative leading to habitat degradation, increased stress to wildlife from increased human presence, or habitat abandonment.

The use of ROPs and Stipulations will reduce impacts to wildlife due to mineral development and exploration resulting from revocation of ANSCA 17(d)(1) withdrawals in the proposed Bristol Bay ACEC. A more detailed description of impacts to wildlife resulting from mineral exploration and development is contained in the discussion on effects from leasable, locatable, and salable minerals. In addition, a Plane of Operation will be required for locatable mineral activities occurring in the ACEC, per 43 CFR 3809.11(c)(3), requiring detailed disturbance and rehabilitating planning.

e) Effects to Wildlife for Alternative D

(1) Effects to Wildlife from Realty and Lands Actions (Alternative D)

Land Exchanges. Impacts to wildlife habitat would be the same as those discussed for Alternative B.

Withdrawals. Impacts to wildlife habitats from removing ANSCA 17(d)(1) withdrawals would be the same as those in Alternative B.

Rights-of-Way. Impacts to wildlife from Rights-of-Way would be the same as those for Alternative B; however, the proposed Carter Spit ACEC would be identified as a right-of-way avoidance area. This would benefit wildlife habitat by reducing the potential for road or pipeline development in the area.

(2) Effects to Wildlife from Mineral Development (Alternative D)

Leasable Minerals. Under Alternative D, ANCSA 17(d)(1) withdrawals would be revoked and 1,101,304 acres of BLM lands would be open to leasable miner activities. A 300-foot No Surface Occupancy area on either side of the East and South Fork Arolik, Faro Creek, South Fork Goodnews River and Klutuk Creek would be proposed (Appendix A, ROP FW-6a and Oil and Gas Lease Stipulation 8). There would be slightly less land available for mineral leasing compared to Alternative B, but more than Alternatives A and C. However, this analysis predicts the development of one gas field in the Koggiling Creek planning block, six exploratory wells (each disturbing approximately six acres) and one seismic survey would occur every five years covering 63 linear miles with a total of 250 miles collected, over the next 20 years under all action Alternatives. Potential impacts to wildlife from such a development are the same as those discussed under Alternative B, with the exception that under Alternative D, stipulations that contain seasonal constraints in areas of caribou calving or high concentration would be applied (Appendix A, ROP FW-3b and Oil and Gas Lease Stipulations 5 and 6).

Locatable Minerals. This analysis predicts locatable mining activities to occur on 115 acres State-selected and Native (Federal mining claim) lands (BLM 2006). These anticipated activities would not occur on unencumbered BLM lands because upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. If these lands were to remain in Federal ownership, impacts to wildlife from this level of development would be the same as for Alternative B. At this level of anticipated development and with the application of ROPs in mining Plans of Operations, impacts to wildlife habitat would not be significant at a population level for any species. Within the Carter Spit ACEC, Plans of Operation would be required for any operation (even those less than five acres). This would have the effect of minimizing small-scale exploratory or development activities and would enable BLM to work with the operator in the Plan of Operation to apply ROPs (Appendix A) for protection of resources.

Salable Materials (Mineral Materials). Impacts to wildlife would be the same as for Alternative B, except the Carter Spit ACEC (36,220 acres) would be closed to salable mineral activities. This Alternative would benefit wildlife populations by protecting important riparian and coastal habitats located within the ACEC boundary. Salable mineral activities would be expected to occur in support of leasable mineral activities in the Koggiling Creek planning block. Impacts to wildlife and wildlife habitat would be similar to those discussed in Alternative B.

(3) Effects to Wildlife from Recreation (Alternative D)

Because BLM lands would be managed for a semi-primitive motorized experience, impacts to wildlife would be the same as those discussed in Alternative A.

(4) Effects to Wildlife from Off-highway Vehicles (Alternative D)

Under Alternative D, impacts to wildlife from OHV use would be the same as those discussed in Alternative C.

(5) Effects to Wildlife from Wild and Scenic River Nominations (Alternative D)

There would be no Wild and Scenic River nominations under this alternative. This would result in more acres available for resource development. Effects to wildlife from anticipated resource development under this alternative are discussed in the topics above.

(6) Effects to Wildlife from designation of Areas of Critical Environmental Concern (Alternative D)

Under Alternative D, the Carter Spit ACEC (36, 220 acres) would be designated. This would benefit wildlife habitat in this area by the following measures:

- Requiring Plans of Operations for any mining operation, even those less than five acres.
- Managing the area as a right-of-way avoidance area, thus avoiding potential impacts from road or pipeline construction.
- Seasonal constraints to protect federally-listed migratory bird species would be developed. (Appendix A, ROP SS-1a and 1b).

Under Alternative D, there would be one ACEC designation (Carter Spit ACEC). The use of ROPs and Stipulations will reduce impacts to wildlife due to mineral development and exploration resulting from revocation of ANSCA 17(d)(1) withdrawals. A more detailed description of impact to wildlife resulting from mineral exploration and development is contained in the discussion on effects from leasable, locatable, and salable minerals. In addition, a Plane of Operation will be required for locatable mineral activities occurring in the ACEC, per 43 CFR 3809.11(c)(3), requiring detailed disturbance and rehabilitating planning.

6. Direct and Indirect Effects for Special Status Species: Fish, Wildlife, and Vegetation Species

Direct and Indirect Effects for Special Status Fish Species

There are no known Special Status fish species in the Bay planning area.

Direct and Indirect Effects for Special Status Wildlife Species

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Special Status Animal Species: Cultural Resources, Paleontological Resources, Visual Resources, Forest Products, Fisheries Management, Wild and Scenic Rivers, and Social and Economic Conditions.

a) Direct and Indirect Effects to Special Status Wildlife Species Common to All Alternatives

(1) Listed Species (Common to All Alternatives)

There are four special status species present or potentially present in or adjacent to the planning area. The Eskimo curlew (*Numenius borealis*), listed as endangered under the Threatened and Endangered Species Act, historically nested in the bay planning area, but is currently thought to be extinct in Alaska. The Steller sea lion (*Eumetopias jubatus*), listed as threatened under the Act, is found near shore waters in Bristol Bay and Kuskokwim Bay areas. It may come ashore on the coastal fringes of BLM lands in those areas, alone or in small numbers. The Steller's eider (*Polysticta stelleri*), listed as threatened under the Act, is a sea duck that is found staging during spring and fall migration and molting during the breeding season in coastal tide flats adjacent to BLM lands in the Goodnews Block. The Carter Spit area and the adjacent spits and coastal mudflats are an important spring staging area for Steller's eiders, as birds move to breeding areas on the North Slope (Larned 1998). They provide important molting area for non-breeding birds in summer (Seppi 1997, Shaw et al. 2005). Kittlitz's murrelets (*Brachyramphus brevirostris*), a candidate species, have been observed on BLM lands in the Carter Spit area. Kittlitz's murrelets likely breed on talus slopes found in the coastal mountains of the Carter Spit area (Day et al 198x).

(2) Effects to Special Status Wildlife Species from Soils, Water, Air, and Vegetation (Common to All Alternatives)

Wildlife Special Status Species would benefit from proper management of soil, water, air and vegetation resources in the planning area. Implementation of mitigation measures to protect these resources on a project-specific basis would reduce disturbance to habitat of special status wildlife and would facilitate the recovery of habitat from permitted uses.

(3) Effects to Special Status Wildlife Species from Fire and Fire Management (Common to All Alternatives)

Listed Species. Effects on Steller's eiders are described in more detail in the Land Use Plan Amendment for Wildland Fire and Fuels Management for Alaska Environmental Assessment (BLM 2004). Steller's eiders are federally-listed as threatened. This species migrates and stages on coastal mudflats and uses near shore waters, but does not breed on BLM lands.

Fire within the breeding habitat of eider species could have negative effects on the breeding population. However, fire frequency in the wet tundra habitat of the coastal planning area is very low, and the threat of wildland fires to the breeding population of Steller's eider and its habitat is negligible. Since fire frequency is so low in these habitats, no fire suppression activity would be likely to occur on BLM lands and there would be no impacts from suppression activities to eiders or their habitat. There is no designated critical habitat within the planning area.

Candidate Species. Fire within the breeding habitat of Kittlitz's murrelet, which uses talus slopes of high mountain habitats for nesting, could have negative effects on the breeding populations. However, fire is rare in these mountainous habitats, and there is rarely adequate vegetation to burn on unstable rock falls and talus slopes. The threat of wildland fire to breeding Kittlitz's murrelet is negligible. Since fire frequency is so low in these habitats, no fire suppression activity would be likely to occur and there would be no impacts from suppression activities. Other than nesting, this bird inhabits ocean waters and bays, and so would not otherwise be impacted by fire or fire suppression activities.

BLM Sensitive Species. Some sensitive species would benefit from fire suppression that minimizes loss of individuals, populations, or habitats. However, fire suppression activities can also affect sensitive species through mortality, disturbance, displacement, and damage or alteration of key habitat components (BLM 2004b).

It is difficult to generalize impacts of fire on passerine birds due to the great variety of habitat requirements. Shrub communities often support the greatest number and diversity of passerine birds (Spindler and Kessel 1980, Kessel 1989). Shrub communities are maintained by periodic fires. Within forested areas, fire creates openings in the forest and provides snags used for nesting, perching, and foraging. Fire may cause direct impacts to birds when it occurs during the nesting season, killing nestlings and destroying nests. Raptors may benefit from fire due to increased populations of small mammals and birds in response to vegetative changes after fire. The timing of the benefit varies, depending upon the type of prey favored by the raptor. Over the short-term, fires reduce cover available for prey species, making them more visible to hunting raptors and other predators.

Fire suppression activities also cause both direct and indirect impacts to wildlife. Wildlife habitat may be destroyed, fragmented, or degraded due to construction of fire breaks or use of OHVs. Small mammals may be killed by the use of mechanized equipment. Mitigation measures designed to reduce the impacts of suppression activities include limitations on the use of tracked, or off-road vehicles; measures to prevent the introduction of invasive or noxious plant species; establishment of riparian buffer zones; and rehabilitation of fire and dozer lines. These types of impacts are expected to be minimal within the planning area as most BLM lands are well removed from the road system, minimizing the potential for the use of mechanized equipment.

Potential direct and indirect effects from fire management include:

- Mortality or injury of adult birds, young, or eggs from smoke inhalation, or crushing by vehicles or equipment used during fire management activities.
- Disturbance or displacement of individuals from smoke, noise, and other human activities associated with fire management operations. This disturbance or displacement may affect foraging, roosting, or reproductive behavior.
- Nest abandonment or mortality of young, resulting in the loss of one year's recruitment.
- Loss or conversion of key habitat components needed for nesting, foraging, roosting, or cover.
- Creation of key habitat components.
- Increased risk of predation associated with removal of cover.
- Changes in the quantity or quality of available forage and prey species.
- Long-term changes in habitat quality or quantity for nesting, roosting, foraging, or cover that affects the ability of a species continuing to occupy an area or facilitating the return of a species to its historic range.

(4) Effects to Special Status Wildlife Species from Livestock Grazing (Common to all Alternatives)

Special status wildlife species that are found or that have the potential to be found in the planning area are birds, which are present during spring and fall migration for feeding or molting and brooding, generally in the Goodnews Block of BLM lands. Currently there are no livestock grazing or reindeer herding operations in the planning area, and no interest has been expressed or is anticipated within the life of the plan. Requests for grazing permits will be analyzed on a case-by-case basis. Should such activities take place, potential impacts might include trampling of vegetation, cratering and exposure of mineral soils by grazing animals, potential direct mortality of nestling birds or eggs of ground nesting species due to trampling by grazing animals, or by OHVs used in association with herding activities.

(5) Effects to Special Status Wildlife Species from Minerals (Common to all Alternatives)

Locatable Minerals. Some mining exploration and development activity could occur under any Alternative. Potential impacts to special status wildlife would include temporary disturbance or displacement in localized areas, temporary loss of habitat, long-term degradation and loss of habitat, and possible direct mortality of nestling birds or eggs. These impacts would be minimal due to the low level of activity anticipated.

Salable Materials. Impacts from salable material acquisition and disposal to special status wildlife would include temporary disturbance or displacement in localized areas, temporary loss of habitat, long-term degradation of habitat, and possible direct mortality of nestling birds or eggs. These impacts would be minimal due to the low level of activity anticipated.

Sufficient salable material sources exist on State and private lands located nearer to most communities than BLM lands.

(6) Effects to Special Status Wildlife Species from Travel Management (Common to all Alternatives)

The noise and activity associated with OHV use can adversely affect special status wildlife both directly and indirectly. Direct effects include stress and displacement of animals, possibly to less suitable habitats. Stress and displacement may result in reduced productivity (ADF&G 1990). Changes to traditional movement patterns and distribution and behavior of special status wildlife can result from exposure to OHVs. OHV use may result in habitat abandonment or changes in density or species population, age, and sex composition in the vicinity of the trail. Air traffic has the potential for aircraft strikes, resulting in serious injury or mortality to individual special status birds.

Indirect effects include habitat degradation and alteration, and increased access into habitats. Remote areas will become more accessible over time as OHVs become more powerful and as the human population in the planning area increases. Snowmachine use compacts snow and may inhibit movement under the snow resulting in habitat abandonment or increased mortality of small rodents, used as a food source by special status bird species. Fragile habitats such as wetlands and riparian areas may be degraded seasonally by OHV use.

Impacts to special status wildlife from travel management should not result in population level implication under any Alternative.

(7) Effects to Special Status Wildlife Species from Recreation (Common to All Alternatives)

Minor impacts to special status wildlife could occur from both commercial and non-commercial recreation activities under all Alternatives. The primary impacts would be temporary stress and displacement of individual animals due to recreational activities, or to recreation associated access such as aircraft overflight and landing in remote areas. In areas that are repeatedly used for camping sites, there may be minor, site-specific degradation of habitat. OHV use associated with commercial recreational activities could occasionally result in mortality of nestlings and the eggs of ground nesting birds. Given the low to moderate level of recreational use on most BLM lands within the planning area, these impacts would be minimal and would not have population level effects.

(8) Effects to Special Status Wildlife Species from Renewable Energy (Common to All Alternatives)

Impacts to special status wildlife would be the same as those described under wildlife, common to all Alternatives. There is a potential for bird mortality due to collisions with wind turbines. Some of the avian mortality could involve Special Status Species, particularly if wind-generating facilities were located within breeding habitats for these species. Since BLM lands in the planning area are fairly remote from villages, use of BLM lands for development of such projects is unlikely during the life of this plan.

(9) Effects to Special Status Wildlife Species from Lands and Realty Actions (Common to All Alternatives)

Upon completion of conveying BLM-selected lands to the State and Native Corporations, anticipated by 2010, only approximately 5% of lands in the planning area will remain in Federal ownership. These lands are generally remote, and the numbers and kinds of Realty actions that will be required would be limited under any Alternative. While there would be both direct and indirect impacts to Special Status Wildlife under all Alternatives, including temporary displacement and disturbance during activities authorized under this program, those impacts would be expected to be low, and to affect a very small percentage of BLM land in the planning area. Impacts would vary among species depending on the proposal, the species' range, life history, and habitat preferences.

(10) Effects to Special Status Wildlife Species from Subsistence activities (Common to All Alternatives)

Some Special Status Species are subject to subsistence hunts by Alaska Natives (e.g. Steller's eider, Stellar sea lions), but the numbers killed each year are managed under the terms of the Marine Mammal Protection Act, and the Endangered Species Act, which provide exemptions for certain qualifying Alaska Native subsistence harvests. Harvests are closely monitored so that species populations are sustained.

b) Effects to Special Status Wildlife Species for Alternative A

(1) Effects to Special Status Wildlife Species from Minerals (Alternative A)

Leasable Minerals. No impacts to special status wildlife under this Alternative would occur because all BLM lands in the planning area would remain withdrawn from Leasable Mineral entry under ANCSA 17(d)(1).

Locatable Minerals: Though most of the BLM lands in the planning area would remain withdrawn from locatable mineral entry under ANCSA 17(d)(1) some pre-ANCSA claims exist allowing for mineral development. According to the RFD for locatable minerals, under Alternative A 23 acres of disturbance is expected to occur on State-selected or Native (Federal mining claim) lands. On these 23 acres, impacts to special status species would be similar to those described in Effects Common to All Alternatives. This alternative anticipates less locatable mineral development and consequently fewer impacts to special status species than alternatives B or D.

Salable Minerals. No salable mineral activities are expected due to the location of BLM lands away from population centers and the retention of ANCSA 17(d)(1) withdrawals precluding salable mineral activities. Under this Alternative, impacts to special status wildlife from salable minerals activities is expected to be less than Alternatives B, C, and D.

(3) Effects to Special Status Wildlife Species from Recreation Management (Alternative A)

Under Alternative A, effects to special status wildlife from Recreation Management would be the same as that described in effects Common to All Alternatives. This is attributed to the remote location of BLM lands within the planning area. Effects to special status wildlife from Recreation Management are expected to be similar to Alternatives C and D.

(4) Effects to Special Status Wildlife Species from Travel Management (Alternative A)

The planning area would remain undesignated with regard to OHV use, and so the impacts would remain similar to current conditions, with some possible increase in intensity should the population increase. Currently, impacts from OHV use on BLM land, is limited to areas immediately adjacent to villages, areas between the Alagnak River and Lake Iliamna, and to portions of the Goodnews Block. Most access to BLM land is by aircraft or by boat. No vehicle weight limits would be recommended which may provide a greater level of impact to special status wildlife habitat in some areas compared to Alternatives B, C, or D. However, effects under Alternative A to special status wildlife from Travel Management are presumed to be less than all other Alternatives. This assumption is made because the retention of ANCSA 17(d)(1) withdrawals could reduce aircraft traffic associated mineral activities. This includes low level flights, associated with take-off and landing, which may impact special status bird species due to increased noise and potential aircraft strikes.

(5) Effects to Special Status Wildlife from Wild and Scenic River Nominations (Alternative A)

There would be no Wild and Scenic River (WSR) nominations under this alternative. Impacts associated with no WSR nominations on special status wildlife is minimal due to retention of ANCSA 17 (d)(1) withdrawals.

(6) Effects to Special Status Wildlife from designation of Areas of Critical Environmental Concern (Alternative A)

There would be no ACEC nominations under this alternative. Impacts associated with no ACEC designations on special status wildlife is minimal due to retention of ANCSA 17 (d)(1) withdrawals.

c) Effects to Special Status Wildlife Species for Alternative B

(1) Effects to Special Status Wildlife Species from Minerals (Alternative B)

Leasable Minerals. Under this Alternative, ANCSA 17(d)(1) withdrawals would be removed, and all BLM lands and any land released from State or Native-selection would be open for mineral leasing. Potential impacts include:

Seismic Exploration. Seismic exploration would only occur in the Koggiling Creek planning block, in the south central portion of the planning area, during the life of this plan based on the Reasonable Foreseeable Development Scenario. This area includes habitat for the trumpeter swan, gray-cheeked thrush, olive-sided flycatcher and blackpoll warbler. In the event that seismic exploration occurs during the winter months, there would be no effect on these species, as they are not present in the planning area at this time.

However, summer geophysical work including field sampling, would involve helicopter support and could have negative effects on these species, depending on the location of the work in relation to their habitat. Summer seismic work, including aircraft overflights, would have temporary and non-lethal effects on special status wildlife, the effects probably lasting less than an hour (BLM 2003b). Elevated activity and air traffic in the vicinity of large summer camps could result in minor impacts on both local and regional populations of these species. The Steller's eider and trumpeter swan are ground nesters in tundra habitats. The eggs and the nestlings could be susceptible to trampling or crushing. Depending on the nature of the effects and the nature and duration of behavioral changes caused by disturbance, such effects could be considered a "taking" under the Endangered Species Act for the listed species.

It is not known if lynx, a sensitive species, inhabit the Koggiling Creek planning block, which is largely a tundra environment. Isolated patches of forest along drainages may provide sufficient habitat for lynx, who seek boreal forest settings. Lynx have been observed at Brooks River in Katmai National Park, for example. Lynx may be temporarily disturbed or displaced by seismic activities, with reoccupation of the area after the exploration activities are complete.

Indirect impacts to special status wildlife, from seismic operations may include degradation of habitat through impacts to soil and vegetation. These types of impacts would be minimized by implementation of the Stipulations and Required Operating Procedures (Appendix A). Under Alternative B, effects to special status wildlife, from foreseeable seismic exploration for leasable minerals would be greater than Alternative A but equal to Alternatives C and D.

Exploratory Drilling. Based on the Reasonable Foreseeable Development Scenario for oil and gas, exploratory drilling would only be expected to occur in the Koggiling Creek planning block, which may be utilized seasonally by migratory waterfowl, and by a number of sensitive migratory waterfowl species, including the trumpeter swan, the king eider, the long-tailed duck, the black scoter, the surf scoter, and the red-throated loon. Other migratory waterfowl on the sensitive species list would be considered to be rare or accidental visitors to the Koggiling Creek planning block. Sensitive species of land birds that may be found in the Koggiling Creek planning block include the rusty blackbird, the gray-cheeked thrush, the olive-sided flycatcher, and the blackpoll warbler. The American peregrine falcon and the Arctic peregrine falcon, two sensitive species, might also be present in the Koggiling Creek planning block. All of these birds, if present, are in this area during spring through fall. Exploratory drilling if carried out in the winter would not affect these species. Under Alternative B, effects to special status wildlife from foreseeable exploratory drilling for leasable minerals would be greater than Alternative A but similar to that discussed in Alternatives C and D.

Leasable Mineral Development. Although construction would occur primarily during winter, development would bring year-round facilities and activities to the Koggiling Creek planning block, which includes seasonal habitat for migratory waterfowl, including trumpeter swans (whose summer concentrations tend to be northeast of Koggiling Creek planning block), the king eider, the long-tailed

duck, the black scoter, the surf scoter, and the red-throated loon. Other migratory waterfowl on the sensitive species list would be considered to be rare or accidental visitors to the Koggiling Creek planning block. Sensitive species of land birds that may be found in the Koggiling Creek planning block include the gray-cheeked thrush, the olive-sided flycatcher, and the blackpoll warbler. The American peregrine falcon and the Arctic peregrine falcon, two sensitive species, might also be present. All of these birds, if present, are in this area during spring through fall. Natural gas development would have the potential to affect these species directly and indirectly. Potential sources of disturbance would be ground vehicles, humans on foot, and low-flying aircraft associated with leasable mineral development. Potential effects would include direct and indirect habitat loss. Direct loss of habitat would result from gravel mining and gravel deposition on the tundra for roads, pads, and airstrips. Under the development scenario used for this analysis, this habitat loss would be limited to 36 acres for the gas wells, plus acreage associated with gravel roads. Indirect habitat loss could occur through reduced access caused by physical or behavioral barriers created by roads, pipelines, and other facilities.

The gravel mining and placement, activities associated with leasable mineral activities, would provide the greatest potential for causing loss of habitat (BLM 2005b). Roads and pads are constructed using gravel, and tundra covered by gravel would no longer be available for nesting, brood-rearing, or foraging for those tundra-nesting threatened and sensitive migratory waterfowl species listed above and others that use this habitat. This loss of habitat would continue for as long as the proposed development was in operation. If abandonment plans called for allowing gravel pads and roads to "bed" naturally, loss of habitat might extend considerably longer than the end of the operational life of the field. Under this Alternative, approximately 20 acres of habitat would be lost to gravel roads. Because of the density of migratory waterfowl use of this area, this potential loss of breeding, feeding and staging habitat for most species would be unlikely to result in some population effects. Under Alternative B, effects to Special Status Wildlife Species from foreseeable leasable mineral development would be greater than Alternative A but similar to that discussed in Alternatives C and D.

Locatable Minerals. Impacts would be similar to those discussed under Effects Common to All Alternatives. However, under Alternative B, ANCSA 17(d)(1) withdrawals would be removed and 1,102,489 acres of BLM lands would be open to locatable mineral activities. Based on the Reasonable Foreseeable Development Scenario for Locatable Minerals (RFD), two types of mining activity could take place in the planning area, lode mineral exploration and development and placer mining. Should locatable mineral activity occur on every existing operation, an estimated total of 115 acres could potentially be disturbed on BLM lands in the planning area. Potential impacts to special status wildlife on these acres would include temporary disturbance or displacement in localized areas, temporary loss of habitat, long-term degradation and loss of habitat, and possible direct mortality of nestling birds or eggs. All 115 acres would occur on State-selected or Native (Federal mining claim) lands due ANILCA 906(e) Top Filings. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA.

While removal of the ANCSA 17(d)(1) withdrawals would open BLM lands to potential mineral exploration and development, it is most likely that should any placer mining projects occur they would occur at sites of existing operations, at locations where mineral deposits are already known to exist. According to the RFD for locatable minerals, much of the Goodnews Bay/Snow Gulch area is considered to have high mineral potential including the Arolik River, Barnum Creek, Butte Creek, Domingo Creek, Faro Creek, Fox Gulch, and Jacksmith Creek tributaries. Though currently unencumbered BLM lands, a large portion of this area becomes priority State-selected lands once the ANCSA 17(d)(1) withdrawal is revoked (top-filed) which then precludes these lands from mineral entry. Under Alternative B, effects to special status species from locatable mineral activities would potentially be greater than Alternative A and C and equal in potential effects to Alternative D because more lands would be made available for activities.

Lode Mineral Activities. Lode mineral activities in the Goodnews Bay area are projected to occur at Tatlignagpeke Mountain and at Mitlak Mountain within the life of this plan. The RFD suggests that the platinum group elements (PGE) content of Tatlignagpeke Mountain might be explored during the life of

this plan. Though currently unencumbered BLM lands, a large portion of this area becomes priority State-selected lands once the ANSCA 17(d)(1) withdrawal is revoked due to ANILCA 906(e) Top Filings which then precludes these lands from mineral entry.

Additionally, lode activities could occur on Native-selected lands at the Wattamuse-Granite Lode property, in the Kasna Creek area at South Current Creek and Upper South Current Creek properties, in the Kijik Lake area at the Dicks Lode, Gull, and Kijik Mountain properties, and in the Pebble Copper area at Hill 1759. On State-selected lands, lode operations could occur in the Iliamna/Fog area at the Dutton, Easy, Karen, and Meadow properties.

While migratory waterfowl move through the Goodnews Bay corridor in very large numbers during migratory seasons, and many of the species listed above can be found nesting on BLM lands in the Goodnews Block, they are unlikely to be found in these mountainous areas. However, BLM sensitive species that might seek out this kind of habitat during breeding and nesting season are the rare Kittlitz's murrelet, the marbled murrelet and the harlequin duck, all of which are sea birds that nest inland at higher elevations. The sensitive American peregrine falcon and the arctic peregrine falcon might also be found in these areas.

Overall, the majority of projected new lode mineral activities on BLM lands in the Goodnews Bay area are not likely to occur due to the lifting of ANSCA 17(d)(1) withdrawals and the subsequent conversion of unencumbered BLM land status to State-selected. Under Alternative B, effects to special status species from lode mineral activities would potentially be greater than Alternative A and C and equal in potential to Alternative D because more lands would be made available for activities.

Placer Mineral Activities. According to the RFD for locatable minerals, placer mineral activities in the Goodnews Bay area could occur at the Barnum Creek, Domingo Creek, Faro Creek, and Jacksmith Creek Tributary which could result in surface disturbance to a total of 14 acres. Though currently unencumbered BLM lands, a large portion of this area becomes priority State-selected lands, due to ANILCA 906(e) Top Filings once the ANSCA 17(d)(1) withdrawal are revoked which then precludes these lands from mineral entry. Portions of Jacksmith Creek are not included in this Top Filing and would remain unencumbered BLM lands and would be open to locatable mineral activities. Placer activities on selected lands include Slate Creek, which could result in disturbance to a total of 36 acres on selected land. Placer activities on the Arolik River, Malaria Creek, Snow Gulch, Tyrone Creek, and Wattamuse Creek in the Goodnews area, and lands in the Iliamna/Fog area and unnamed property west of Chekok on selected land could impact up to 47 acres of selected land. An additional 18 acres of active Federal claims on Native land could be disturbed on the Salmon River.

All locatable mineral related activities occurring on BLM land are subject to current BLM surface regulations as outlined in 43 CFR 3809. Operators are required to have an approved Plan of Operations or Notice of Operations. All operations are required to meet applicable Federal and State air and water quality standards for permitting. Placer mineral activities are not expected to have population-level effects on any BLM Special Status animal species during the life of this plan.

Under Alternative B, effects to special status species from placer mineral activities would potentially be greater than Alternative A, C and, D because more lands would be made available for activities including the Jacksmith Creek which is located near the coastal area used by migratory birds, including Steller's eiders.

Salable Minerals (Mineral Materials). Salable material activities on BLM lands are available unless specifically closed by Public Land Order.

As discussed in a previous section, sand and gravel would be needed for the construction of access roads and gravel pads should leasable mineral activities proceed in the Koggiling Creek planning block. With the exception of these activities, extraction of salable materials is more likely to occur on State or Native lands due to the closer proximity of these lands to villages compared to BLM lands.

Should they occur, mineral materials projects would require an approved permit containing Required Operating Procedures based on site-specific resource concerns and would be subject to all State and Federal laws and regulations.

Under Alternative B, effects to special status species from salable mineral activities would be similar to those discussed in "Effects Common to All Alternatives." These impacts may potentially be more widespread compared to Alternative A, C and, D because more lands would be made available, though expectations of development are low for the life of the plan.

(3) Effects to Special Status Wildlife Species from Recreation Management (Alternative B)

Under this Alternative recreation within the planning area would be managed as Roaded Natural. Though not expected within the life of the plan, increased rustic development to provide convenience and safety for recreational users, and improved road maintenance may occur. These improvements may provide greater access and result in more frequent human and wildlife encounters, including Special Status Wildlife. The potentially increased recreation may result in greater stress to special status wildlife and prey, possibly leading to habitat abandonment in excessive situations. Under Alternative B, effects to special status wildlife may be greater than Alternatives A, C and D.

(4) Effects to Special Status Wildlife Species from Travel Management (Alternative B)

Travel Management would be designated as open on BLM lands within the entire planning area, providing access to all areas by OHVs. No OHV weight restrictions would be established allowing any and all vehicles types to access lands. Impacts to special status wildlife include temporary displacement from habitat and short-term degradation of habitat. In areas of high OHV use, long term habitat degradation and abandonment may occur though unlikely due to the remote locations of BLM lands. On unencumbered BLM lands and selected lands in close proximity to unencumbered lands, due to lifting of ANSCA 17(d)(1) withdrawals, the potential for increased air travel may be experienced due to increased mineral exploration, development, inspection, and monitoring activities. Noise from low flying aircraft, predominantly take-off and landing aircraft, may disturb special status wildlife. The potential for aircraft strikes may impact special status bird species. These effects would be greater than Alternative A and less than Alternatives C and D. The potential impacts from increased air traffic under Alternative B would be greater than Alternative A and similar to Alternatives C and D.

(5) Effects to Wildlife from Wild and Scenic River Nominations (Alternative B)

There would be no Wild and Scenic River (WSR) nominations under this alternative.

(6) Effects to Wildlife Effects to Wildlife from designation of Areas of Critical Environmental Concern (Alternative B)

There would be no ACECs proposed under this alternative.

d) Effects to Special Status Wildlife Species for Alternative C

(1) Effects to Special Status Wildlife Species from Minerals (Alternative C)

Leasable Minerals. Under Alternative B, 1,103,138 acres of BLM lands would be open to leasable mineral activities. Based on the Reasonable Foreseeable Development Scenario, leasable mineral activities would consist of one gas field in the Koggiling Creek planning block, six exploratory wells (each disturbing approximately six acres) and one seismic survey would occur every five years covering 63 linear miles with a total of 250 miles collected, over the next 20 years. Impacts to special status wildlife from leasable mineral activities would be similar to those in Alternative B though fewer acres would be available for leasable mineral activities.

ANCSA 17(d)(1) withdrawals would be lifted except 12,210 acres of proposed Wild and Scenic Rivers, until Congress has had an opportunity to act, and within the proposed Carter Spit ACEC (61,251 acres). Within the Bay area, approximately 3,968 acres would remain withdrawn from mineral entry due to Agency withdrawals. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA.

Under Alternative C, less acreage would be available for leasable mineral development compared to Alternative B or D.

Locatable Minerals. Under Alternative C, 1,064,313 acres of BLM lands within the planning area would be open to locatable mineral activities. Because of constraints associated with ACECs, Wild and Scenic River suitability, and ANILCA 906(e) top-filings, this analysis assumes no new lode or placer mining activities. Consequently, impacts as described under Effects Common to All Alternatives would only occur on existing mining claims. ANCSA 17(d)(1) withdrawals would be removed and BLM lands would be open to locatable mineral activities. ANCSA 17(d)(1) withdrawals would be retained for proposed WSR segments (12,210 acres) which may provide protection to special status wildlife within the established WSR corridors and the proposed Carter Spit.

According to the RFD for locatable minerals, much of the Snow Gulch area is considered to have high mineral potential including the Arolik River, Barnum Creek, Butte Creek, Domingo Creek, Faro Creek, Fox Gulch, and Jacksmith Creek tributaries. Though currently unencumbered BLM lands, a large portion of this area becomes priority State-selected lands once the ANCSA 17(d)(1) withdrawals are revoked due to ANILCA 906(e) Top Filings, precluding these lands from mineral entry.

Under Alternative C, effects to special status wildlife from locatable mineral activities would be less than Alternatives B and D and greater than Alternative A. ROPs have been developed to protect special status wildlife (Appendix A, ROPs part 4, Special Status Species).

Salable Materials. Impacts would be similar to those discussed under Effects Common to All Alternatives, but very limited salable mineral activity is anticipated under this alternative. The Carter Spit ACEC, Bristol Bay ACEC, and proposed WSR corridors would be closed to salable minerals activities. . The closure of the Bristol Bay ACEC would restrict salable mineral activities in conjunction with leasable mineral activities in the Koggiling Creek planning block.

Under Alternative C, impacts to special status wildlife from salable material activities would be greater compared to Alternatives A but less than Alternatives B and D due to the reduced amount of land available for salable material activities.

(3) Effects to Special Status Wildlife Species from Recreation Management (Alternative C)

Under Alternative C, impacts to special status wildlife would be the same as discussed under effects Common to All Alternatives. An increase of recreational visitors may be expected in the planning area due to designation of "Wild" rivers. Increased air traffic due to increased tourism, guides and outfitters may cause short-term stress to special status wildlife from noise, temporary displacement from landing areas, and possible mortality due to aircraft strikes. Overall, increased visitation may cause seasonal stress to special status wildlife felt throughout the WSR corridor. These effects are expected to be short-term and not felt throughout the population of any special status wildlife within the planning area.

(4) Effects to Special Status Wildlife Species from Travel Management (Alternative C)

Under Alternative C, BLM lands would be designated as limited, which requires OHVs to stay on existing trails. Vehicle weight limits for OHVs of 2,000 pounds gross vehicle weight rating (GVWR) would be enforced.

Travel management restrictions within the planning area, including eligible/suitable WSRs and the proposed Bristol Bay and Carter Spit ACECs, would be defined through the development of a comprehensive trails and travel management plan within five years of signing the ROD.

Under Alternative C, impacts to special status wildlife from travel management use would be similar to that discussed in “Effects Common to All Alternatives” but because the planning area would be designated as “limited” to designated roads and trails the intensity and total anticipated area of impacts would be reduced.

(5) Effects to Wildlife from Wild and Scenic River Nominations (Alternative C)

Determining three river segments as suitable for inclusion into the National System may potentially attract more visitors to the area for recreation activities. This may include increased boating, camping, air traffic, and increased special recreation permits for various outfitters and guides. Boating noise may provide short-term impacts to special status wildlife that inhabit cliffs along river cutbanks or riparian areas. Increased air traffic due to increased eco-tourism, guides and outfitters may cause short-term stress to special status wildlife from noise, temporary displacement from landing areas, and possible mortality due to aircraft strikes. Overall, increased visitation may cause seasonal stress to special status wildlife felt throughout the WSR corridor. These effects are expected to be short-term and not felt throughout the population of any special status wildlife within the planning area.

Under Alternative C, effects to special status wildlife from WSR designation would be mostly beneficial because potentially large surface disturbing activities associated with leasable and locatable mineral activities would be prohibited. Increased recreation from WSR designation would have localized short-term negative impacts to special status wildlife.

(6) Effects to Wildlife Effects to Wildlife from designation of Areas of Critical Environmental Concern (Alternative C)

Designation of two ACECs would provide additional protection to special status wildlife from certain surface disturbing activities. The Carter Spit ACEC would retain ANSCA 17(d)(1) withdrawals, preventing new leasable and locatable mineral activities within this area to protect federally-listed migratory birds. In addition, the Carter Spit and Bristol Bay ACECs would be an avoidance areas for rights-of-ways. This would reduce stress described in Alternative B for leasable and locatable mineral activities to special status wildlife within these areas. ANSCA 17(d)(1) withdrawals would be lifted within the Bristol Bay ACEC but salable mineral activities would be prohibited and resources utilized by Special Status Wildlife would be protected during leasable and locatable activities by ROPs and Stipulations (Appendix A, ROPs, Part 4. Special Status Species).

e) Effects to Special Status Wildlife Species for Alternative D

(1) Effects to Special Status Wildlife Species from Minerals (Alternative D)

Leasable Minerals. Impacts to special status wildlife from leasable mineral activities would be the same as discussed under Alternative B, except NSO would be authorized within 300-feet of the East and South Fork Arolik, Faro Creek, South Fork Goodnews River, and Klutuk Creek to protect riparian areas and soils adjacent to sensitive habitat for salmon and freshwater fish (Appendix A, ROP FW-6a and Oil and Gas Lease Stipulation 8). No Bristol Bay ACEC would be proposed. No WSRs would be found suitable, and ANSCA 17(d)(1) withdrawals would be lifted from the proposed Carter Spit ACEC (36,220 acres), opening the area to leasable mineral activities. This analysis anticipates the development of one gas field in the Koggiling block. Impacts to Special Status Wildlife species from that activity are discussed under Alternative B.

Locatable Minerals. Impacts to special status wildlife from locatable mineral activities would be the same as discussed under Alternative B. No Bristol Bay ACEC would be proposed. No WSRs would be

found suitable, and ANSCA 17(d)(1) withdrawals would be lifted from the proposed Carter Spit ACEC (36,220 acres), opening the area to locatable mineral activities. ROPs would be used to provide added protection to special status wildlife (Appendix A, ROPs Part 4. Special Status Species).

Salable Minerals. Impacts to special status wildlife from salable mineral activities would be the same as discussed under Alternative B, except the proposed Carter Spit ACEC would be closed to salable mineral activities. No Bristol Bay ACEC would be proposed, opening the area to salable mineral activities, including the Koggiling Creek planning block, subject to Required Operating Procedures (Appendix A).

(2) Effects to Special Status Wildlife Species from Recreation Management (Alternative D)

Impacts to special status wildlife from Recreation Management would be the same as discussed in Alternative A. No Bristol Bay ACEC or WSR segments would be proposed, ROPs (Appendix A) would apply to all permissible activities.

(3) Effects to Special Status Wildlife Species from Travel Management (Alternative D)

Impacts to special status wildlife from Travel Management would be the same as discussed in Alternative C. ROPs (Appendix A) would apply to all permissible activities.

(4) Effects to Wildlife from Wild and Scenic River Nominations (Alternative D)

No river segments would be found suitable for inclusion into the National system. Negative impacts associated with increased recreational visitors may be avoided but eligible river segments would not have protection from development other than ROPs and Stipulations (Appendix A).

(5) Effects to Special Status Wildlife Species from designation of Areas of Critical Environmental Concern (Alternative D)

Alternative D would designate the Carter Spit ACEC (36,220 acres). Management within the ACEC would provide stronger protection to special status wildlife species through the following measures:

- Requiring Plans of Operations for any mining operation, even those less than five acres (CFR 43 CFR 3809.11).
- Managing the area as a right-of-way avoidance area, thus avoiding potential impacts from road or pipeline construction.
- Developing a transportation plan that identifies specific designated trails for OHV use, thus preventing unauthorized stream crossings and associated negative impacts.
- The area would be closed to salable mineral development, thus eliminating any potential for negative impacts associated with gravel extraction.

Under Alternative D, there would be one ACEC designation (Carter Spit ACEC). The use of ROPs and Stipulations will reduce impacts to special status wildlife species due to mineral development and exploration resulting from revocation of ANSCA 17(d)(1) withdrawals. A more detailed description of impact to special status wildlife species resulting from mineral exploration and development is contained in the discussion on effects from leasable, locatable, and salable minerals. In addition, a Plan of Operation will be required for locatable mineral activities occurring in the ACEC, per 43 CFR 3809.11(c)(3), requiring detailed disturbance and rehabilitating planning.

Delineating Right-of-Way avoidance areas within the proposed ACEC would have a positive impact on special status species because road or pipeline construction would likely not occur. Potential impacts, resulting from road or pipeline construction include; degradation or alternations of habitat and disturbance. Avoiding Rights-of-way authorization will prevent degradation to Special Status Species habitat by preventing degradation to soils, water, vegetation and air resources in the ACEC.

Direct and Indirect Effects for Special Status Vegetation and Rare Vegetation Species

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Special Status Plants: Cultural Resources, Paleontological Resources, Visual Resources, Forest Products, Renewable Energy, Lands and Realty Actions, Wildlife and Wildlife Habitat, Fisheries Management, Wild and Scenic Rivers, Social and Economic Conditions, and Subsistence.

a) Direct and Indirect Effects to Special Status Vegetation Species Common to All Alternatives

One BLM Sensitive Species of plant is located within the planning area, the pear-fruited smelowskia (*Smelowskia pyriformis*). It has been located in the western Alaska Range north of the planning area and in the southernmost Kuskokwim Mountains in the Goodnews Bay region (Drury and Rollins 1952; Hultén 1968; Murray 1981; Murray and Lipkin 1987; Parker 1994; Rollins 1993; Welsh 1974).

(1) Effects to Special Status Vegetation Species from Soils, Water, Air, and Vegetation Management (Common to All Alternatives)

Special status vegetation species would benefit from proper management of soil, water, air and vegetation resources in the planning area. Project requests in habitat of special status vegetation found within the planning area are unlikely during the life of the plan because of the undesirable terrain. Identification of special status vegetation habitat and implementation of protection measures would be addressed through project-specific NEPA analysis.

(2) Effects to Special Status Vegetation Species from Leasable and Salable Minerals Activities (Common to All Alternatives)

Leasable Minerals. Oil, gas, and coalbed natural gas activities are not expected to impact special status vegetation on BLM lands within the planning area during the life of this plan. Under all alternatives leaseable mineral activities is either restricted or not expected to occur in areas having special status vegetation.

Locatable Minerals. Existing and future locatable mineral activities have the potential to unfavorably impact special status plants and their habitat by stripping away the vegetation as part of mine site overburden, trampling vegetation, and compacting soils throughout the mine site. This is done by the development of trails, roads, camp buildings, airstrips, and other temporary or semi-permanent mine associated infrastructure. Site-specific mitigation measures would be identified through project-specific NEPA analysis. Only one area of BLM lands, Tatlignagpeke Mountain in the Goodnews Bay region, has both habitat for the smelowskia and known lode mineral occurrences, with elevations at or above 2,500 feet. Other locations in the Goodnews Bay region with potential habitat but no known mineral resources include Twin Mountain and Figure Four Mountain in the proposed Carter Spit ACEC, and the southern half of Figure Four Mountain, located just south of the proposed ACEC. An area of BLM lands in the northeast Bristol Bay region with potential habitat but no known mineral resources, is the Chekok Creek area, with elevations to 4,000 feet.

Salable Minerals. In a region of glacial deposits, large quantities of materials, including sand and gravel, are available throughout the planning area at low elevations. Due to the remote location of BLM lands, it is doubtful salable materials would be sought from BLM lands within the planning area throughout the life of the plan, especially from locations in the difficult terrain where the smelowskia would be located.

3) Effects to Special Status Vegetation Species from Fire and Fire Management (Common to All Alternatives)

It is unlikely that fire would have an effect on the smelowskia. The known plants' habitat consists of isolated, steep, sparsely vegetated, unstable alpine scree from 2,000 to 5,500 feet in elevation. Wildland fires are uncommon in the planning area, and fire is not likely to burn well on this type of unvegetated scree.

(4) Effects to Special Status Vegetation Species from Livestock Grazing (Common to All Alternatives)

Although there is currently no form of livestock grazing in the planning area, livestock grazing could be permitted on a case-by-case basis under all Alternatives. It is unlikely that livestock grazing would have any impact to the smelowskia, considering it is found on isolated, steep, sparsely vegetated, unstable alpine scree from 2,000 to 5,500 feet in elevation. These areas are typically unsuitable for grazing.

(5) Effects to Special Status Vegetation Species from Recreation Management (Common to All Alternatives)

The sources of impacts to vegetation from commercial and non-commercial recreation activities would include hiking, aircraft landings at remote sites, occasional or repeated use of remote camp sites and associated social trails. Potential effects might include trampling and crushing of plants and disturbance or compaction of the soil. Potential impacts to the smelowskia are likely to occur from hiking activities only. However, the potential location of the plant on steep unconsolidated scree-covered slopes would present a hazard to hikers, who might elect other more favorable areas. These plants also appear to inhabit areas as isolated, scattered individual plants. The likelihood of impacts from recreational activities in this lightly-populated, lightly-used region would be low, and would not have population level effects.

(6) Effects to Special Status Vegetation Species from Travel Management (Common to All Alternatives)

Direct and indirect impacts to vegetation could occur from Travel Management and OHV use, including the potential to destroy the vegetation mat, compact soils, accelerate permafrost melt, and contribute to soil erosion. Higher, rockier terrain in remote areas, where the smelowskia and its habitat might be located, are becoming more accessible over time as OHVs become more sophisticated and powerful. However, the population and visitation in the planning area in the more mountainous regions is low.

(7) Effects to Special Status Vegetation Species from Locatable Minerals

a) Effects to Special Status Vegetation from Locatable Minerals (Alternative A)

Under Alternative A, most BLM lands in the planning area would be withdrawn from exploration and development under ANCSA 17 (d)(1). No pre-ANSCA claims exist in the Tatlinagpeke Mountain area. Under Alternative A, effects to special status vegetation from locatable minerals would be less compared to Alternatives B, C, and D because of the reduced acreage available for development.

b) Effects to Special Status Vegetation from Locatable Minerals (All Action Alternatives B, C and D)

Under Alternative B, ANSCA 17(d)(1) withdrawals would be lifted and BLM lands would be open to locatable mineral activities. Upon lifting of ANCSA 17(d)(1) withdrawals, ANILCA 906(e) Top Filings land would become State-selected and new locatable mineral activities would not be authorized through Federal mining claims. These top-filed lands include the high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, including the Tatlinagpeke Mountain area. If this area is relinquished from State-selection, then locatable mineral development may occur. This may potentially impact special

status vegetation. Under Alternatives B, C and D, impacts to special status vegetation from locatable minerals would be similar to that discussed in effects Common to All Alternatives. Impacts to special status vegetation under Alternatives B may potentially be more wide-spread compared to Alternatives A, C, and D because of the increased acreage available for development.

7. Direct and Indirect Effects for Cultural and Paleontological Resources

a) Direct and Indirect Effects to Cultural and Paleontological Resources Common to All Alternatives

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Cultural Resources: Soils, Water, Air, and Vegetation Management. Visual Resources, Forest Products, Renewable Energy, Wildlife and Wildlife Habitat, Fisheries Management, Wild and Scenic Rivers, Social and Economic Conditions, and Subsistence.

Both Federal undertakings and unauthorized uses have the potential to cause irreversible harm to cultural and Paleontological resources. Impacts may include trampling, breakage, or unearthing by livestock, foot traffic, or mechanized equipment from fire suppression activities, mining activities, recreation activities, and OHV use. These BLM authorized undertakings will avoid impacts to cultural and Paleontological resources through project re-design or alternative siting. Unavoidable impacts from undertakings will be mitigated through data recovery investigations in accordance with the National Cultural Programmatic Agreement and the Alaska Protocol for Managing Cultural Resources. Unauthorized impacts will be addressed as feasible through monitoring, law enforcement investigation, and public education efforts.

All undertakings occurring on BLM land are evaluated by a qualified cultural resource specialist. Because of budget, personnel, and seasonal constraints, Level I inventories (literature searches) are a common practice. Level III (Class III) inventory (intensive on the ground survey) occurs when the potential for cultural resources are considered to be high or surface disturbance is likely. This is due to funding and accessibility issues as well as low resource development in this area. Therefore, the exact number, kind, and variability of cultural resources within the planning area are unknown. New cultural resources will continue to be found and evaluated for eligibility to the National Register of Historic Places as future inventories are completed. If significant sites are found, they will be appropriately mitigated under Federal law and policy

(1) Effects to Cultural and Paleontological Resources from Minerals Activities (Common to All Alternatives)

Leasable. Mineral leasing has the potential to affect cultural resources through exploration and development related activities. Access to areas open to leasing for exploration purposes may impact cultural resources through overland travel by OHVs as well as through ground disturbance associated with the drilling of exploration wells. Development of oil or gas production wells would require the additional construction of logistic support facilities such as roads and camps, which could affect cultural resources through their construction. The additional construction of associated transmission pipelines and compression/gas plants would also have the potential to affect cultural resources. Any ground disturbing activity has the potential for eroding or excavating buried archaeological resources and for damaging surface resources. The stipulations contained in the standard lease would minimize impacts and ensure pre-construction cultural compliance with the National Historic Preservation Act.

Locatable. Some lode or placer mining is predicted for each alternative. Mining could affect cultural resources through both exploration and development by eroding or excavating buried archaeological resources, damaging surface resources, or by causing adverse effects to places that have religious or

cultural importance to indigenous peoples. Additional impacts to cultural resources and necessary mitigation measures will be evaluated through the NEPA process for each specific Plan of Operation.

(2) Effects to Cultural and Paleontological Resources from Recreation (Common to All Alternatives)

Under all alternatives, the predominant recreation use is dispersed. No alternative proposes development of recreation facilities. Impacts to cultural and paleontological resources associated with dispersed recreation are mostly related to access (e.g. use of OHVs or aircraft to access recreation opportunities). Impacts from OHV use are discussed under Travel Management. Other impacts associated with dispersed recreation use include trampling and compaction of soil and vegetation associated with social trails or campsites. At the level of recreation use in the planning area, any impacts to cultural or paleontological resources from casual recreation use is insignificant. Any commercial recreation activity is handled through issuance of a Special Recreation Permit, subject to site-specific NEPA analysis and stipulations to protect cultural or paleontological resources.

(3) Effects to Cultural and Paleontological Resources from Fire (Common to All Alternatives)

Surface historic structures are subject to severe effects from fire itself. Organic materials used in construction are likely to be damaged or destroyed as a result of burning. Subsurface resources are much less likely to be significantly affected by fire. In a severe fire, organic material such as bone, ivory, and wood that is present in the soil matrix will be destroyed.

Intense heat is also likely to fracture and otherwise damage non-organic material such as ceramics and chipped stone. Because of well-developed vegetation mats and generally moist soils, fire in this region does not usually burn extensive areas to mineral soil. Therefore, severe impacts to subsurface cultural resources are very unlikely.

Effects of Fire Suppression. The possibility of damage to surface cultural resources from fire suppression activities is relatively slight. This is particularly true of standing historic structures which can be easily observed, even by untrained individuals. Consequently it is likely that most suppression activities such as fireline and camp construction can be located so as to prevent impacts to surface cultural resources. Surface sites such as lithic scatters will be disturbed by fireline construction and similar ground disturbing activities.

Subsurface cultural resources are more likely to be damaged by suppression activities, particularly fireline construction. Such resources are difficult to observe, particularly where well-developed vegetation mats obscure them, increasing the likelihood that such sites will not be discovered until after they have been disturbed.

(4) Effects to Cultural and Paleontological Resources from Livestock Grazing (Common to All Alternatives)

Currently there is no livestock grazing nor is any expected in the planning area within the life of the plan. Livestock grazing could be permitted on a case-by-case basis under all Alternatives. Livestock grazing at high stocking rates can result in removal of protective vegetation, compaction of soil, damage to historic sites (through rubbing or trampling), and breakage of scattered surface lithics. However, livestock grazing at these intensities will not occur on BLM lands in the planning area.

(5) Effects to Cultural and Paleontological Resources from Lands and Realty Actions (Common to All Alternatives)

ANCSA 17(d)(1) withdrawal review. The three action alternatives recommend revocation of ANCSA 17(d)(1) withdrawals to varying degrees. These actions affect cultural and paleontological resources indirectly by opening some lands to mineral leasing and location and potential mineral development.

Direct effects to cultural and paleontological resources from mineral development are described elsewhere in this section.

Use authorizations. The issuance of rights-of-way, particularly those related to road or pipeline construction, would have the most potential for ground-disturbance and potential negative impacts to cultural resources. Alternatives B and D anticipate more rights-of-way in support of mineral development than Alternatives A and C. All permitted activities and use authorizations (including rights-of-way) are subject to site-specific stipulations and cultural clearance to comply with the National Historic Preservation Act.

(6) Effects to Cultural and Paleontological Resources from Travel Management (Common to All Alternatives)

Off Highway Vehicle use can result in vegetation compaction and removal and soil compaction and erosion. On areas underlain by permafrost, removal of the vegetative mat will result in melting of the permafrost and soil subsidence, resulting in boggy and wet areas. Trails often braid around these areas, sometimes becoming wide. These impacts to soils and vegetation can also impact cultural resources, if they are present. Erosion or compaction of soils can expose buried pre-historic sites and expose them to breakage or vandalism. Increased unmanaged access can result in damage or vandalism at historic sites.

b) Direct and Indirect Effects to Cultural Resources for Alternative A

(1) Effects to Cultural Resources from Minerals Activities (Alternative A)

Leasable. ANSCA 17(d)(1) withdrawals would prevent leasable mineral activities from occurring on BLM lands within the planning area.

Locatable. Under Alternative A, effects to cultural and paleontological resources from locatable mineral activities would be similar to “Effects Common to All Alternative.” Under this alternative, these effects are only anticipated to occur on 23 acres of BLM lands. Existing mining activities have the potential to unfavorably impact cultural and paleontological resources. Existing pre-ANSCA mining claims are located on BLM lands within the planning area. According to the RFD for Locatable Minerals, no surface disturbance is expected to occur on claims that currently have no mining activity within the life of the plan, under Alternative A. ANSCA 17(d)(1) withdrawals would prevent new mining claims from being staked. Potential impacts to cultural resources and necessary mitigation measures will be evaluated through the NEPA process and Plans of Operations for each specific activity. Effects to cultural and paleontological resources from locatable mineral activities would be less than that under Alternatives B, C, and D.

Salable. ANSCA 17(d)(1) withdrawals would prevent salable mineral activities from occurring on BLM lands within the planning area.

(2) Effects to Cultural and Paleontological Resources from Travel Management (Alternative A)

Under Alternative A, effects to cultural and paleontological resources from locatable mineral activities would be similar to “Effects Common to All Alternative”. BLM lands would be undesignated to OHV use with no weight restrictions, and as a result, negative impacts to cultural resources may be more common and severe compared to Alternatives B, C, and D.

c) Direct and Indirect Effects to Cultural Resources for Alternative B

(1) Effects to Cultural Resources from Minerals Activities (Alternative B)

Leasable. Under Alternative B, ANSCA 17(d)(1) withdrawals would be lifted and leasable mineral activities would occur on BLM lands. Effects to cultural and paleontological resources from leasable

mineral activities would include trampling or unearthing of cultural resources leading to breakage or decomposition. Though only exploration activities are expected within the life of the plan, likely leasable mineral development could occur within the Koggiling Creek Planning Block, with impacts as described above under Effects Common to All Alternatives. Potential impacts to cultural and paleontological resources and necessary mitigation measures will be evaluated through the NEPA process for each specific activity. Negative impacts to cultural resources from leasable mineral activities may be greater under Alternative B compared to Alternatives A and C but similar to impacts of Alternative D.

Locatable. Under Alternative B, effects to cultural and paleontological resources from locatable mineral activities would be similar to “Effects Common to All Alternative” but effects would have the potential to be more widespread compared to Alternatives A, C, and D. ANSCA 17(d)(1) withdrawals would be lifted and increased locatable mineral activities would occur, according to the RFD for Locatable Minerals. Existing pre-ANSCA mining claims would be able to increase in size, and new claims could be staked on BLM lands. Potential impacts to cultural and paleontological resources and necessary mitigation measures will be evaluated through the NEPA process and Plans of Operations for each specific activity.

Salable. ANSCA 17(d)(1) withdrawals would be lifted and salable mineral activities could occur on BLM lands. Due to the remote location of BLM lands within the planning area, it is unlikely that salable mineral activities would occur, except in conjunction with leasable mineral activities within the Koggiling Creek Planning Block. Impacts to cultural and paleontological resources from salable mineral extraction are similar to those described for locatable minerals. The impact occurs from excavation and destruction of cultural sites. Negative impacts to cultural resources from salable mineral activities may be greater under Alternative B, due to the larger acreages available for salable mineral activities, compared to Alternatives A, C, and D.

(2) Effects to Cultural and Paleontological Resources from Travel Management (Alternatives B)

Impacts to cultural and paleontological resources from Travel Management would be similar to that discussed in Alternative A.

d) Direct and Indirect Effects to Cultural Resources for Alternative C

(1) Effects to Cultural Resources from Minerals Activities (Alternative C)

Leasable. Under Alternative C ANSCA 17(d)(1) withdrawals would be lifted and leasable mineral activities would occur on unencumbered BLM lands, including exploration and possible resources development within the Koggiling Creek planning block. ANSCA 17(d)(1) withdrawals would be maintained for the Carter Spit ACEC (61,251 acres) and all eligible river segments found suitable for inclusion to the National WSR system, preventing leasable mineral activities. NSO restrictions would further restrict leasable mineral activities within 300 feet of the East and South Fork Arolik River, Faro Creek, South Fork Goodnews River, and Klutuk Creek (Appendix A, ROP FW-6a and Oil and Gas Lease Stipulation 8). Effects to cultural and paleontological resources from leasable mineral activities would include trampling or unearthing of cultural and paleontological resources leading to breakage or decomposition. Potential impacts to cultural resources and necessary mitigation measures will be evaluated through the NEPA process for each specific activity. Under Alternative C, negative impacts to cultural and paleontological resources from leasable mineral activities would be less than Alternatives B and D and greater than Alternative A.

Locatable. Under Alternative C, effects to cultural and paleontological resources from locatable mineral activities would be similar to those described under Effects Common to All Alternatives in the immediate area of disturbance. However, plan wide, less potential would exist due to the reduction of acres available for locatable mineral activities. ANSCA 17(d)(1) withdrawals would be lifted and increased locatable mineral activities would occur, according to the RFD for Locatable Minerals. ANSCA 17(d)(1) withdrawals would be maintained for the Carter Spit ACEC (61,251 acres) and all eligible river segments found suitable for inclusion to the National WSR system, preventing locatable mineral activities. Existing

pre-ANSCA mining claims would be able to increase in size and new claims could be staked on BLM lands. Potential impacts to cultural and paleontological resources and necessary mitigation measures will be evaluated through the NEPA process and Plans of Operations for each specific activity.

Salable. Under Alternative C, effects to cultural and paleontological resources from salable mineral activities would be similar to Alternative B in the immediate area of disturbance. However, plan wide, less potential would exist due to the reduction of acres available for salable mineral activities. ANSCA 17(d)(1) withdrawals would be lifted allowing mineral activities to occur on BLM lands. ANSCA 17(d)(1) withdrawals would be retained in the proposed Carter Spit ACEC (61,251 acres) and all eligible river segments found suitable for inclusion to the National WSR system, restricting salable mineral activities. In addition, salable mineral activities would be restricted from the proposed 974,970 acre Bristol Bay ACEC preventing leasable mineral activities from occurring within the Koggiling Creek planning block in conjunction with leasable mineral activities.

Due to the remote location of BLM lands within the planning area, it is unlikely that salable mineral activities would occur.

(2) Effects to Cultural and Paleontological Resources from Travel Management (Alternatives C)

Under Alternative C, all BLM lands would be designated as "limited" for OHV use and a 2,000-lb GVWR weight restriction would be enforced. Negative impacts to cultural and paleontological resources may be reduced compared to current management practices because OHV use would be restricted to specific trails under a limited designation. OHV weight limitations may reduce the severity of impacts to cultural and paleontological resources should they occur. The intensity of negative impacts as described under Effects Common to All Alternatives from Travel Management under Alternatives C would be less compared to Alternatives A and B.

e) Direct and Indirect Effects to Cultural Resources for Alternative D

(1) Effects to Cultural Resources from Minerals Activities (Alternative D)

Leasable. Under Alternative D, effects to cultural and paleontological resources from leasable mineral activities would be similar to Alternative B in the immediate area of disturbance. However, plan wide, less potential would exist due to the reduction of acres available for leasable mineral activities. ANSCA 17(d)(1) withdrawals would be lifted and leasable mineral activities would occur on BLM lands, including exploration and possible resources development within the Koggiling Creek planning block. ANSCA 17(d)(1) withdrawals would be lifted from the proposed Carter Spit ACEC (36,220 acres), allowing leasable mineral activities subject to ROPs and Stipulations. NSO restrictions would restrict leasable mineral activities within 300 feet of the East and South Fork Arolik River, Faro Creek, South Fork Goodnews River, and Klutuk Creek (Appendix A, ROP FW-6a and Oil and Gas Lease Stipulation 8). Effects to cultural resources from leasable mineral activities would include trampling or unearthing of cultural resources leading to breakage or decomposition. Potential impacts to cultural resources and necessary mitigation measures will be evaluated through the NEPA process for each specific activity. Under Alternative C, negative impacts to cultural and paleontological resources from leasable mineral activities would be less than Alternatives B and D and greater than Alternative A.

Locatable. Under Alternative D, effects to cultural and paleontological resources from locatable mineral activities would be similar to Alternative B. ANSCA 17(d)(1) withdrawals would be lifted and increased locatable mineral activities would occur according to the RFD for Locatable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from the proposed Carter Spit ACEC (36,220 acres) and locatable mineral activities would be permitted upon approval of Plans of Operations. Existing pre-ANSCA mining claims would be able to increase in size and new claims could be staked on BLM lands, subject to ROPs (Appendix A). Potential impacts to cultural and paleontological resources and necessary mitigation measures will be evaluated through the NEPA process and Plans of Operations for each specific activity.

Salable. Under Alternative D, effects to cultural and paleontological resources from salable mineral activities would be similar to Alternative B in the immediate area of disturbance. However, plan wide, less potential would exist due to the reduction of acres available for salable mineral activities. ANSCA 17(d)(1) withdrawals would be lifted and salable mineral activities could occur on BLM lands. Due to the remote location of BLM lands within the planning area, it is unlikely that salable mineral activities would occur, except in conjunction with leasable mineral activities within the Koggiling Creek planning block. Salable mineral activities would be restricted from the proposed Carter Spit ACEC (36,220 acres). Under Alternative D, negative impacts to cultural and paleontological resources from salable mineral activities may be greater than Alternatives A and C but less than Alternative B.

(2) Effects to Cultural and Paleontological Resources from Travel Management (Alternatives D)

Under Alternative C, all BLM lands would be designated as “limited” for OHV use and a 2,000-lb GVWR weight restriction would be enforced. Impacts would be similar to that discussed in Alternative C.

8. Direct and Indirect Effects for Visual Resource Management

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Visual Resource Management (VRM): Cultural Resources, Paleontological Resources, Fisheries Management, Wild and Scenic Rivers, Social and Economic Conditions, and Subsistence.

a) Effects to Visual Resource Management Common to All Alternatives

In order to maintain the scenic values of public lands, BLM has been utilizing a Visual Resources Management (VRM) system that uses adaptive management to manage different levels of scenic values. Determining visual effects can be a subjective process. For this plan, assessments were collected from past VRM inventory reports. The inventory process is described in detail in BLM Handbook 8410-1 (BLM 1984).

(1) Effects to Visual Resources Management from Soils, Water, Air, and Vegetation management (Common to All Alternatives)

Visual resources would benefit from proper management of soil, water, air, and vegetation resources in the planning area. Cumulatively, each of these resources contributes to the scenic quality of the planning area. Identification and implementation of protection measures to prevent unnecessary or undue degradation of these resources would be addressed through project-specific NEPA analysis and through application of ROPs and Stips described in Appendix A.

(2) Effects to Visual Resource Management from Wildlife Management (Common to All Alternatives)

Critical Habitat Areas for listed species across Alaska have been, or are in the process of being determined for USFWS and NFMS T&E species. Critical Habitat Area designation may provide additional protection for visual resources by restricting development, which could obstruct viewing of natural features or degrade soil, water, air, and vegetative resources, ultimately impacting visual resources.

(3) Effects to Visual Resource Management from Fires and Fuels Management (Common to All Alternatives)

Ninety-two percent of Alaska BLM lands statewide are designated as Limited and Modified fire management option areas, meaning that naturally occurring fires are desired, but do have some

constraints. Although direct loss of vegetation would occur from wildland fires, mechanical or manual treatments, and prescribed burns, the change to the existing landscape character would be considered relatively short-term. Wildland fires are uncommon in the planning area and impacts of wildland fire and fuels management will be minimal within the planning area.

(4) Effects to Visual Resource Management from Forestry Management (Common to All Alternatives)

Commercial forestry practices could have long-term impacts to visual resources. No commercial forestry is carried out within the planning area, nor is any activity anticipated within the life of the plan. Therefore, no impacts to Visual Resource Management are anticipated within the foreseeable future.

(5) Effects to Visual Resource Management from Lands and Realty Management (Common to All Alternatives)

Conveyance. BLM is working to complete the conveyance of Native and State-selected lands by 2010. Land conveyance may have negative impacts to VRM should the new land managers allow increased development on lands adjacent to BLM lands. Should BLM lands be relinquished from State or Native-selection, the visual resources of those lands would likely be maintained at the VRM class described in Chapter II of this plan.

Use Authorizations. Issuance of Rights-of-Way could provide minimal to excessive negative impacts to visual resources depending on the scale of the proposed project. Most rights-of-way for activities such as roads or pipelines are linear features that do not necessarily blend with the natural landscape. This analysis anticipates more rights-of-way associated with mineral development for Alternatives B and D.

ANCSA 17(b)(1) withdrawals. The three action alternatives recommend revocation of ANCSA 17(d)(1) withdrawals to varying degrees. These actions affect visual resources indirectly by opening some lands to mineral leasing and location and potential mineral development. Direct effects to visual resources from mineral development are described elsewhere in this section.

(6) Effects to Visual Resource Management from Locatable Minerals Activities (Common to All Alternatives)

Locatable mineral activities may have adverse effects on the visual resources. Denuding of landscape, development of tailing piles, altered water ways and constructed facilities could have long-term impacts to the quality of visual resources in the immediate area of locatable mineral activities. The development of roads associated with locatable mineral activities may provide localized and large scale negative impacts on the visual resources, depending on access requirements.

(7) Effects to Visual Resource Management from Renewable Energy (Common to All Alternatives)

Under all Alternatives, lands available for potential renewable energy program sites would be evaluated on a case-by-case basis. Effects to visual resources associated with renewable energy programs are generally less severe in magnitude and extent relative to other development activities.

Wind, hydroelectric, and solar power projects would affect visual resources by obstructing views, vegetative removal, soil erosion, or altering waterbodies. These effects would largely result from construction activities, such as the creation of new utility corridors, access roads, and transmission lines, creating access opportunities to new visual resources, or modifying the existing landscape character. The magnitude and extent of these effects would vary for each project. Due to the remote locations of most BLM lands, large scale renewable energy projects are not expected to occur within the life of the plan.

(8) Effects to Visual Resource Management from Socioeconomics (Common to All Alternatives)

The lives of many Alaskan residents are tied to the natural environment. While many of the BLM lands within the planning area are difficult to access and not located in proximity to communities, visual resources are utilized and valued in varying degrees by residents within the planning area, as well as tourists. As the population within the planning area continues to increase, there would be increasing pressure on the ability to maintain visual resources that can be closely tied to regional economies, recreational opportunities, employment, and quality of life issues for residents. In addition, maintenance of a natural, visual quality condition would be expected to sustain a high quality habitat for subsistence wildlife and plant species. This ability to acquire subsistence resources may be the greatest factor in socioeconomics plan wide. It is expected that the current condition of socioeconomics within the planning area would have a positive impact on visual resources.

b) Effects to Visual Resources for Alternative A

No VRM classes are established under this Alternative.

(1) Effects to Visual Resources from Lands and Realty (Alternative A)

Access (Rights of Way). There are no avoidance or exclusion areas identified within the planning area under this Alternative. Rights-of-Way (ROW) are typically used for communication sites, utility corridors, or for access to mining claims and usually remain under BLM management. As growth and development continues in the planning area, the need for ROWs for transportation and utility corridors would increase. Potentially new access routes may change the existing form, line, color, and texture of the visual landscape. However, few annual ROW applications for the planning area have been received. This alternative anticipates the least amount of mineral development and consequently would expect few ROW applications.

Withdrawals. ANSCA 17(d)(1) withdrawals would be retained under this Alternative. Because of the constraints in place under these withdrawals, there would be less potential for resource development and activities that would alter the visual landscape.

(2) Effects to Visual Resources from Leasable, Locatable, and Salable Minerals (Alternative A)

Leasable Minerals. 17(d)(1) withdrawals would be retained on BLM lands within the planning area, prohibiting leasable mineral activities.

Locatable Minerals. Impacts to visual resources from locatable mineral activities would be similar to that discussed under Effects Common to All Alternatives. BLM lands in the planning area may be subject to localized adverse effects on visual resources from existing mineral claims. Under this Alternative, 23 acres of disturbance may occur from pre-ANSCA mining claims on BLM and Native (Federal mining claim) lands in the Goodnews Bay/Snow Gulch area (Arolik River, Barnum Creek, Butte Creek, Domingo Creek, Faro Creek, Fox Gulch, and Jacksmith Creek tributaries).

Salable Minerals. 17(d)(1) withdrawals would be retained on BLM lands within the planning area, prohibiting salable mineral activities.

(3) Effects to Visual Resources from Travel Management (Alternative A)

All lands within the Bay planning area would remain open for OHV use. The number of OHV trails throughout the planning area may stay the same or increase slightly within the life of the plan. These trails fragment the natural landscape, creating varying degrees of change to the existing visual character of the area. Braided trail sections more than 200 feet wide have been documented in Alaska (Meyer 2004). Important viewpoints and visual resources that may have been previously inaccessible may

become part of an expanding network of OHV trails, especially in areas of established moderate use, such as in the north and east Goodnews Bay area.

(4) Effects to Visual Resources from Wild and Scenic Rivers (Alternative A)

There is no Wild and Scenic Rivers recommended for designation to the National System under Alternative B. Thus, the scenic quality of river segments within the planning area would not be afforded additional protections.

(6) Effects to Visual Resources from designation of Areas of Critical Environmental Concern (Alternative A)

Under Alternative A, there are no ACECs proposed.

c) Effects to Visual Resource Management for Alternative B

All lands under Alternative B would be managed as VRM Class IV, which would allow actions that make major modifications to the existing character of the landscape.

(1) Effects to Visual Resources from Lands and Realty (Alternative B)

Exchanges. Several parcels have been identified for exchange under this Alternative. Impacts to visual resources would depend on specific projects authorized by the new land manager. However, due to the small, scattered nature of these parcels, any development or alterations in the visual landscape resulting from their sale would be minimal.

Acquisitions. Under Alternative B, the acquisition of lands and easements from willing landowners would be considered on a case-by-case basis. Easements provide access to lands managed by the NPS, USFS, or USFWS, and once lands are conveyed, the easement is managed by the respective agency. The visual quality of these easements would likely be maintained.

Access (Rights of Way). There are no avoidance or exclusion areas identified within the planning area under this Alternative. Rights-of-Way (ROW) are typically used for communication sites, utility corridors, or for access to mining claims, and usually remain under BLM management. As growth and development continue in the planning area, the need for ROWs for transportation and utility corridors would increase. Potentially new access routes may change the existing form, line, color, and texture of the visual landscape. This alternative anticipates more Rights-of-way application in association with mineral exploration and development than any other alternative.

(2) Effects to Visual Resources from Leasable, Locatable, and Salable Minerals (Alternative B)

Leasable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening 1,103,138 acres to potential leasable mineral activities. Impacts to visual resources from leasable mineral activities may include, removal of vegetation and facilities construction, resulting in impacts to color, line, and texture of developed areas, with the removal of vegetative cover creating color contrast between the greens of vegetation and the browns of soils. Gas production wells, pads, and associated roads would create linear features that would not blend with the natural landscape. These impacts may be long-term but small in scale, isolated to the Koggiling Creek planning block. Impacts to visual resources from leasable mineral activities under Alternative B would be similar in scale to the impacts discussed under Alternative D and less in scale compared to Alternatives A and C because fewer lands would be available for leasable mineral activities.

Locatable Minerals. Where mining occurs, impacts to visual resources would be similar to those discussed under Effects Common to All Alternatives. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area. These lands may be subjected to localized adverse effects on visual

resources from existing and increased locatable mineral claims. According to the Reasonable Foreseeable Development Scenario for the plan, expected locatable mineral development is to occur on 115 acres within the entire planning area under Alternative B. Upon lifting of ANCSA 17(d)(1) withdrawals, Top Filed land would become State-selected and new locatable mineral activities would not be authorized through Federal mining claims. These Top Filed lands include the high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch. Impacts to visual resources from locatable mineral activities under Alternative B would be similar in scale to the impacts discussed under Alternative D and greater in scale compared to Alternatives A and C.

Salable Minerals. ANCSA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential salable mineral activities. Impacts to visual resources from salable mineral activities may be long-term but small in scale, isolated to the Koggiling Creek planning block, in support of leasable mineral activities. Impacts to visual resources from salable mineral activities under Alternative B would be greater than Alternatives A, C, and D because fewer lands would be available for salable mineral activities.

(3) Effects to Visual Resources from Travel Management (Alternative B)

All lands within the planning area would be designated as "Open" under Alternative B. Because OHV use on BLM lands is currently unrestricted, this management action would have similar effects to Alternative A. Increasing OHV trail creation and widening causes change to the existing form, line, color, and texture of the visual landscape. Important viewpoints and visual resources that may have been previously inaccessible may become part of an expanding network of OHV trails, especially in areas of established moderate use such as Goodnews Bay. Under Alternative B, impacts to visual resources from travel management may be greater in scale compared to Alternatives A, C, and D because the potential increase in mineral development may contribute to more vehicle traffic in remote areas.

(4) Effects to Visual Resources from Wild and Scenic Rivers (Alternative B)

There would be no Wild and Scenic Rivers recommended for designation to the National System under Alternative B. Thus, the scenic quality of river segments within the planning area would not be afforded additional protections, other than those outlined in the Stipulations and Required Operating Procedures (Appendix A).

(5) Effects to Visual Resources from designation of Areas of Critical Environmental Concern (Alternative B)

Under Alternative A, there are no ACECs proposed. With less area-wide constraints, more resource development might occur in these areas, with impacts to visual resources as described above.

d) Effects to Visual Resources from Alternative C

(1) Effects to Visual Resources from Lands and Realty (Alternative C)

Access (Rights of Way) – The proposed Carter Spit ACEC and Bristol Bay ACEC would be identified as avoidance areas for ROWs. Authorization of ROWs within these areas would be limited in scale. Impacts to visual resource management from ROW authorization include changes to the existing form, line, color, and texture of the visual landscape. However, few annual ROW applications for the planning area have been received. Under Alternative C, impacts to visual resources from ROW authorizations would be less in scale compared to Alternatives B and D because of ROW avoidance areas.

(2) Effects to Visual Resources from Leasable, Locatable, and Salable Minerals (Alternative C)

Leasable Minerals. ANCSA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential leasable mineral activities. Impacts to visual resources from

leasable mineral activities may be long-term but small in scale, isolated to the Koggiling Creek planning block. Impacts to visual resources from leasable mineral activities under Alternative C would be similar in scale to the impacts discussed under Alternatives B and D and greater in scale compared to Alternative A.

Locatable Minerals. Where mining occurs, impacts to visual resources from locatable mineral activities would be similar to those discussed under Effects Common to All Alternatives. Under this alternative, ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, except in the Carter Spit ACEC (61,251 acres) and river segments recommended for inclusion to the National WSR system (12,210 acres). Lands open to locatable mineral activities may be subjected to localized adverse effects on visual resources from existing and increased locatable mineral claims. According to the Reasonable Foreseeable Development Scenario for the plan, expected locatable mineral development is to occur on 43 acres of BLM State-selected and Native (Federal mining claims) lands due to ANILCA 906(e) Top Filings. Impacts to visual resources from locatable mineral activities under Alternative C would be similar in scale to the impacts discussed under Alternative A and reduced in scale compared to Alternatives B and D.

Salable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential salable mineral activities. Impacts to visual resources from salable mineral activities may be long-term but small in scale. Salable mineral activities would be restricted from occurring within the boundaries of the proposed Bristol Bay and Carter Spit ACECs. This would prevent salable mineral activities from occurring within the Koggiling Creek planning block in support of leasable mineral activities. Impacts to visual resources from salable mineral activities under Alternative C would be greater than Alternative A but less than Alternatives B and D because fewer lands would be available for salable mineral activities.

(3) Effects to Visual Resources from Travel Management (Alternative C)

BLM lands would be designated as limited to OHV use and a 2,000-lb GVWR restriction would be enforced. Limiting use within the planning area may reduce adverse effects to visual resources relative to the current level of effects. An area of low to moderate OHV use, the Goodnews Bay area may feel the highest level of beneficial effects towards changing the existing landscape character. Impacts to visual resources from Travel Management would be less than Alternatives A and B and similar to Alternative D.

(4) Effects to Visual Resources from Wild and Scenic Rivers (Alternative C)

Under Alternative C, BLM would recommend three river segments for Wild and Scenic River designation (Alagnak River, Goodnews River mainstem and Middle Fork Goodnews River). These river segments would be designated a VRM class III within five miles of the full visible foreground of main river travel routes. Alternative C would provide greater protection to visual resources within the immediate areas of designated Wild and Scenic Rivers by restricting development and surface disturbance within the WSR corridors and the five mile buffer of VRM III. Under Alternative C, visual resources would be provided greater protection, due to increased acreage of VRM III, compared to Alternatives B and D. Under Alternative C, the retention of ANSCA 17(d)(1) withdrawals in these areas may provide greater protection to visual resources, though VRM designation would not be applied.

(5) Effects to Visual Resources from designation of Areas of Critical Environmental Concern (Alternative C)

Under Alternative C, the Bristol Bay (974,970 acres) and Carter Spit (61,251 acres) ACECs would be proposed. Each of these areas would be managed at VRM Class III, applying additional mitigating measures to development activities to protect visual resources. Under Alternative C, visual resources would be provided greater protection, due to increased acreage of VRM III, compared to Alternatives B and D. Under Alternative A, the retention of ANSCA 17(d)(1) withdrawals in these areas may provide greater protection to visual resources, though VRM designation would not be applied.

e) Effects to Visual Resources for Alternative D

(1) Effects to Visual Resources from Lands and Realty (Alternative D)

Access (Rights-of-Way). The proposed Carter Spit ACEC (36,220) would be identified as an avoidance area for Rights-of-Way. Projects within the ACEC boundary would be designed to reduce impacts to biological resources. Impacts to the current visual landscape in this area would be minimized through Stipulations and Required Operating Procedures (Appendix A). Other areas requiring avoidance on a local level for impacts on visual resource management would be identified on a case-by-case basis.

(2) Effects to Visual Resources from Leasable, Locatable, and Salable Minerals (Alternative D)

Under Alternative D, effects would be the same as discussed under Alternative B, except the Carter Spit ACEC (36,220 acres) would not be available for salable mineral activities. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Any effects to visual resources occurring on those lands would continue at or slightly above current levels.

(3) Effects to Visual Resources from Travel Management (Alternative D)

Under Alternative D, OHV use on BLM lands would be managed as described under Alternative C, designated as "limited" and a 2,000-lb GVWR restriction would be enforced on OHV use on all BLM lands within the planning area. Because OHV use on BLM managed lands is currently unrestricted (open), this management action would likely reduce OHV effects to the existing landscape.

(4) Effects to Visual Resources from Wild and Scenic Rivers (Alternative D)

There would be no Wild and Scenic Rivers recommended for designation to the National System under Alternative D. Protection of scenic resources associated with the Alagnak River, Goodnews River mainstem, and Goodnews River Middle Fork River segments would be accomplished through Stipulations and Required Operating Procedures (Appendix A, ROPs Part 8).

(5) Effects to Visual Resources from designation of Areas of Critical Environmental Concern (Alternative D)

Under Alternative D, the Carter Spit (61,251 acres) ACECs would be proposed. This area would be managed at VRM Class III, applying additional mitigating measures to development activities to protect visual resources.

D. Resource Uses

1. Resources Use Assumptions

Climate Change

Activities occurring on BLM-managed lands may contribute to climate change by emitting greenhouse gases. Though greenhouse gases are vital to maintaining global ambient temperatures suitable for life on earth excess greenhouse gas in the atmosphere may contribute to global climate change (DOE, 2003). Activities that may occur on BLM-managed lands with the potential to emit greenhouse gases include some leasable mineral activities described in Chapter III, section B.C.3.a, recreation activities using motor vehicles, or prescribed burning.

2. Forest Products

Currently, there are no forest product programs on BLM lands in the planning area. Due to a lack of available timber suitable for commercial use or sale, no forest product projects are anticipated within the life of this plan. Commercial logging is not likely to occur in the reasonably foreseeable future in the planning area due to low timber volume, low productivity, unsuitability of the timber for commercial use or sale, scattered locations of timber stands, and long distances involved in timber transport. Consequently, proposed management of other resources or resource uses would have little to no impact on forest products.

3. Livestock and Reindeer Grazing

There are no authorized livestock grazing operations within the planning area. There have been no requests for permits nor are any expected within the life of the plan. Livestock, reindeer, or pack animal grazing, if requested, would occur by permit only. Requests would be carefully considered, and grazing would not be permitted where it is incompatible with wildlife populations, habitats, and where landscape conditions would become less stable, (i.e. high erosion areas). Effects to livestock and reindeer grazing would be the same under all Alternatives.

4. Direct and Indirect Effects for Recreation Management

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Recreation: Visual Resources, Forest Products, Renewable Energy, Economic Conditions, and Subsistence.

a) Effects to Recreation (Common to All Alternatives)

(1) Effects to Recreation from Soils, Water, Air, and Vegetation Management (Common to All Alternatives)

Soil, water, air, and vegetation management may provide restriction to recreation if these resources become excessively degraded by recreation uses. Though uncommon within the planning area due to the remote location of BLM lands, restriction would be short-term and apply only to localized areas.

(2) Effects to Recreation from Fish and Wildlife Management (Common to All Alternatives)

Management of fish and wildlife habitats to provide environments to support viable populations of fish and wildlife will have a direct impact on recreation. By enhancing or altering wildlife habitats, the animals used for recreational hunting, fishing, and trapping would be either increased or decreased. Viewing opportunities of wildlife may be increased or decreased as well. Recreation could be enhanced through the introduction of sought after big game animals if habitat would support such introduction.

(3) Effects to Recreation from Fire and Fire Management (Common to All Alternatives)

Fire promotes vegetation and wildlife diversity, which can enhance recreation opportunities in both the short- and long-term. Vegetative diversity provides variation in vegetation types, providing variation in form, texture, and color and enhancing scenic qualities. Long-term opportunities for wildlife viewing or hunting may be enhanced by new vegetation growth (willow moose browse) and improved habitat quality. Wildland or prescribed fire may be used to improve wildlife habitat thereby increasing wildlife numbers to the benefit of recreational users. Negative effects of fire on recreation are generally short-term and are directly related to fire's effects on specific resources used in recreation, such as recreation facilities.

Effects on visual and cultural resources, wildlife, and vegetation would have immediate and direct effects on use of these resources for camping, sightseeing, hunting, and other activities. Recreation users are generally mobile, thus, if recreation is precluded by fire in one area, they generally can find an alternate area in which a similar recreational activity can be pursued. However, smoke thick enough to limit aircraft flights could result in impacts on recreational and commercial activities. Existing and future BLM structures and facilities will be protected to the benefit of recreational users.

(4) Effects to Recreation from Lands and Realty Management (Common to All Alternatives)

BLM is working to complete the conveyance of Native and State-selected lands by 2010. Land conveyance may have negative impacts to recreation should the new land managers allow increased development or greater restrictions on recreational uses on lands adjacent to BLM lands.

(5) Impacts to Recreation from Cultural and Paleontological Resources (Common to All Alternatives)

Protection and possible interpretation of these resources would enhance recreation opportunities and experiences for those seeking these types of experiences.

(6) Effects to Recreation from Locatable Minerals (Common to All Alternatives)

Existing mining operations have provided secondary access to recreational opportunities. Often these operations provide remote air landing strips and localized trails. Large-scale mining operations with associated infrastructure (such as roads and powerlines) are not anticipated within the life of the plan.

Mineral development has the potential to create impacts to recreation, particularly if development occurs in areas that provide primitive or semi-primitive recreation experiences. Mineral development has the potential to impact the viewshed. Public access into areas of development would have secondary effects on adjacent areas by increasing visitor use and may lead to the development of additional dispersed campsites and trails.

(7) Effects to Recreation from Recreation Management (Common to All Alternatives)

Currently, only four special recreation permits (SRP) are issued on BLM lands within the planning area. Within the life of the plan 10 SRPs are expected to be issued at any one time. This is attributed to the remote location of most BLM land. In response to the anticipated low number of SRPs and the dispersed

nature of recreational activities in the planning area, no Special Recreation Management Areas (SRMA) would be designated on BLM lands within the planning area.

b) Direct and Indirect Effects to Recreation from Alternative A

(1) Effects to Recreation from Lands and Realty (Alternative A)

Access (Rights of Way). There are no avoidance or exclusion areas identified within the planning area under this Alternative. Rights-of-Way are typically used for communication sites, utility corridors, or for access to mining claims, and usually remain under BLM management. Because of the retention of most ANCSA 17(d)(1) withdrawals, this alternative anticipates very little new resource development and associated applications for rights-of-way.

Withdrawals. ANCSA 17(d)(1) withdrawals would be retained under this Alternative. Most BLM lands would continue to be closed to mineral entry. Because of the lack of resource development expected under this alternative, recreation opportunities would remain as described under current conditions: primitive, semi-primitive, and semi-primitive motorized.

Disposal and Acquisition. No lands have been identified for disposal under this alternative. There would be no impact to recreation if land disposal does not occur.

Under Alternative A, acquisitions would continue to be considered on a case-by-case basis as opportunities arise. Where acquisitions of private inholdings occur, particularly in heavy use recreation areas, there would be a benefit to the recreation program by eliminating the potential for private development or limitations on access.

(2) Effects to Recreation from Minerals (Alternative A)

Leasable. ANCSA 17(d)(1) withdrawals would be maintained under this alternative and no mineral leasing is anticipated.

Locatable. Because of the retention of ANCSA 17(d)(1) withdrawals, no new mining activity is anticipated and development on existing claims would be limited to 23 acres on BLM lands. In the immediate area of the mineral development, recreation opportunities may be enhanced by the access provided (either through roads, trails, or remote airstrips). However, the development would detract from recreation opportunities through alteration of the natural landscape and degradation of the scenic quality. Increased access can also mean increased visitation and motorized use, with recreation experiences trending from primitive, semi-primitive, or semi-primitive motorized towards roaded natural.

Salable. No activity is anticipated under this alternative.

(3) Impacts to Recreation from Recreation Management (Alternative A)

The Recreation Opportunity Spectrum (ROS) classification will continue as **Semi-Primitive Motorized**. No SRMAs would be designated under Alternative A. No facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) would be added to the range of recreational experiences currently available. This would have negative impacts on recreational users preferring some rustic facilities. Recreational opportunities would be primarily limited to independent remote backcountry experiences and through guided tours.

(4) Impacts to Recreation from Travel Management (Alternative A)

All BLM lands in the planning area are designated as open and no weight restrictions apply to OHV use. Under this Alternative recreational use of OHV would have the least restrictions but may result in short and long term degradation to resources because of the potential wide-spread use of OHVs. Unmanaged

OHV use can result in proliferation of OHV trails, with recreation experiences trending from primitive or semi-primitive towards semi-primitive motorized or roaded natural.

(5) Impacts to Recreation from Areas of Critical Environmental Concern (Alternative A)

No ACECs which provide measures for the protection of specific resource values, would be designated under this alternative. In general, resource values would be afforded less protection and wildlife viewing, hunting and fishing opportunities and other recreational use may decrease without the protective measures offered by these designations.

(6) Impacts to Recreation from Wild and Scenic River designation

No Wild and Scenic River segments would be recommended under this Alternative. With the retention of ANCSA 17(d)(1) withdrawals, this would have little effect on recreation. No resource development would be expected in these river areas.

c) Effects to Recreation from Alternative B

(1) Effects to Recreation from Lands and Realty (Alternative B)

Access (Rights of Way). This alternative anticipates the most resource development and associated rights-of-way applications than any other alternative. Rights-of-way, particularly those used for roads, can provide access to recreation opportunities. However, increased access will alter existing recreation opportunities by increasing the level of visitor use and by detracting from the natural setting, trending from primitive or semi-primitive towards semi-primitive motorized or roaded natural.

Withdrawals. ANCSA 17(d)(1) withdrawals would be revoked. This would indirectly effect recreation by allowing resource development. Direct effects of development are discussed elsewhere in this section.

Disposal and Acquisition. Some parcels would be identified for land exchange. If disposal was to occur, development on private lands may bring a heavy concentration of recreational users which may negatively impact adjacent BLM land or recreational users on adjacent BLM lands. Private landowners may limit access for recreational users to adjacent BLM lands.

(2) Impacts to Recreation from Minerals (Alternative B)

Leasable. This alternative recommends revocation of all ANCSA 17(d)(1) withdrawals and makes more lands available for mineral leasing than any other alternative. However, because of low potential and inaccessibility, this analysis anticipates the development of only one natural gas field, in the Koggiling block. In the immediate vicinity of the development, access would be increased for recreational users. However, the production wells, gravel pads, gravel roads, and maintenance traffic would detract from the primitive and semi-primitive setting that currently exists. Some recreational users may be displaced. Outside of the Koggiling block, no mineral leasing is anticipated and no effects to recreation would occur.

Locatable. Because of the revocation of ANCSA 17(d)(1) withdrawals and the lack of any area-wide constraints, this alternative anticipates some level of new mineral development (115 acres). Increased infrastructure providing access to these developments could provide access for recreation users that does not currently exist. In the immediate area of the mining development, most users would be displaced because of the activity, noise, and alteration of the natural setting.

Salable. This alternative anticipates more development of salable minerals, particularly gravel, than any other alternative. Because these developments would mostly be connected to leasable or locatable mineral development, effects to recreation would be the same as described above under Leasable and Locatable.

(3) Impacts to Recreation from Recreation Management (Alternative B)

The Recreation Opportunity Spectrum (ROS) classification will be **Roaded Natural** under this alternative. Facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) may be added to the range of recreational experiences currently available. The construction of rustic facilities may appeal to some recreation users. Recreational opportunities would be primarily limited to independent remote backcountry experiences and through guided tours.

(4) Impacts to Recreation from Travel Management (Alternative B)

All BLM lands in the planning area would be designated as open and no weight restrictions would apply to OHV use. Impacts would be similar to those discussed in Alternative A.

(5) Impacts to Recreation from Areas of Critical Environmental Concern (ACEC) (Alternative B)

No ACECs would be designated under this alternative. Consequently, ACEC resource protection constraints would not apply and more resource development is anticipated. Effects of increased development on recreation under this alternative are discussed under Impacts to Recreation from Minerals and Impacts to Recreation from Travel Management.

(6) Impacts to Recreation from Wild and Scenic River designation (Alternative B)

No Wild and Scenic River segments would be recommended under this Alternative. Several effects to recreation might take place. On one hand, the protective constraints associated with Wild and Scenic river suitability would not occur, thus making these river areas open for potential mineral development and associated impacts to recreation. On the other hand, based on experience with other Alaskan rivers, Wild and Scenic river designation comes with increased visitation and associated impacts to the existing recreation experience. Under this alternative, that would not occur.

d) Effects to Recreation from Alternative C

(1) Effects to Recreation from Lands and Realty (Alternative C)

Access (Rights of Way). This alternative would designate two ACECs (Carter Spit and Bristol Bay). Those ACECs are identified as avoidance areas for rights-of-way. Consequently, because of the constraints identified, very little resource development and associated rights-of-way applications are anticipated under this alternative.

Withdrawals. Most ANCSA 17(d)(1) withdrawals would be revoked. However, ANCSA 17(d)(1) withdrawals would be retained in the Carter Spit ACEC and in river corridors considered as suitable for inclusion as Wild and Scenic Rivers. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Consequently, very little mineral development (43 acres) is expected on BLM lands.

Disposal and Acquisition. No parcels have been identified for exchange. Impact would be similar to Alternative A.

(2) Effects to Recreation from Minerals (Alternative C)

Leasing. This alternative would revoke most existing ANCSA 17(d)(1) withdrawals but retain them in the Carter Spit ACEC and in river corridors considered as suitable for inclusion as Wild and Scenic Rivers. Consequently, less acreage would be available for leasing under this alternative than under alternatives B and D, but more than under A. However, this analysis anticipates the development of one natural gas

field in the Koggiling block. Effects of that development on recreation are the same as described under Alternative B.

Locatable. Because of constraints associated with ACECs and Wild and Scenic River suitability and the effect of Top Filings, this alternative anticipates only 43 acres of mineral development. Effects to recreation in the immediate area of those 43 acres are as described under alternatives A and B. Because of the limited amount of development, changes to the overall recreation opportunity spectrum would be insignificant on BLM lands.

Salable. Very limited salable mineral development is anticipated under this alternative. Any development would be associated with leasable or locatable mineral development, with effects as described above.

(3) Impacts to Recreation from Recreation Management (Alternative C)

The Recreation Opportunity Spectrum (ROS) classification will continue as Semi-Primitive Motorized. Impacts would be similar to Alternative A.

(4) Impacts to Recreation from Travel Management (Alternative C)

BLM lands would be designated as limited to OHV use and a 2,000-lb GVWR restriction would be enforced. Limiting OHV use within the planning area may reduce recreation opportunities for some groups, while the added protection to renewable resources may reduce the potential for area closures to OHV/recreation use. Limiting unmanaged proliferation of OHV use would have the effect of maintaining primitive and semi-primitive recreation experiences, rather than those experiences trending towards semi-primitive motorized.

(5) Effects to Recreation from Wild and Scenic Rivers (Alternative C)

Under Alternative C, BLM would recommend three river segments for Wild and Scenic River designation (Alagnak River, Goodnews River mainstem and Middle Fork Goodnews River). Under Alternative C, increased opportunities for recreation may result from WSR designation. This may include increased access opportunities by air travel and increased opportunity for fishing, float trips, and camping. Increased visitation on these rivers could result in increased impacts associated with recreation use along rivers, including campsite impacts, litter, human waste, and development of social trails. These effects over time will move a primitive experience to semi-primitive.

(6) Effects to Recreation from designation of Areas of Critical Environmental Concern (Alternative C)

Under Alternative C, the Bristol Bay (974,970 acres) and Carter Spit (61,251 acres) ACECs would be proposed. These areas would not benefit recreation because designation is for added protection of wildlife and habitat rather than for recreational purposes. Constraints associated with these ACECs could limit some resource development and associated impacts on recreation.

e) Effects to Recreation from Alternative D

(1) Effects to Recreation from Lands and Realty (Alternative D)

Access (Rights of Way). An avoidance area is recommended for the Carter Spit ACEC (36,220 acres). This may reduce access to this area for recreation but will also maintain the area in a mostly undeveloped and natural setting.

Withdrawals. ANCSA 17(d)(1) withdrawals would be revoked. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral

occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA.

Disposal and Acquisition. No parcels have been identified for exchange. Impact would be similar to Alternative A.

(2) Effects to Recreation from Minerals (Alternative D)

Leasable. Effects to recreation would be the same as those described for Alternative B.

Locatable. Effects to recreation would be the same as those described for Alternative B.

Salable. Effects to recreation would be the same as those described for Alternative B.

(3) Impacts to Recreation from Recreation Management (Alternative D)

The Recreation Opportunity Spectrum (ROS) classification will continue as Semi-Primitive Motorized. Impact would be similar to Alternative A.

(4) Impacts to Recreation from Travel Management (Alternative D)

BLM lands would be designated as limited to OHV use and a 2,000-lb GVWR restriction would be enforced. Limiting OHV use within the planning area may reduce recreation opportunities for some groups, while the added protection to renewable resources may reduce the potential for area closures to OHV/recreation use. Impacts to recreation would be similar to that discussed in Alternative C.

(5) Effects to Recreation from Wild and Scenic Rivers (Alternative D)

No river segments for Wild and Scenic River designation would be recommended under Alternative D. Impacts to recreation would be similar to that discussed in Alternative B.

(6) Effects to Recreation from designation of Areas of Critical Environmental Concern (Alternative D)

Under Alternative D, the Carter Spit ACEC (36,220 acres) would be proposed. This would be designated a right-of-way avoidance area, possibly reducing access for recreation purposes. These areas would not benefit recreation because designation is for added protection of wildlife and habitat rather than for recreational purposes. However, constraints associated with these ACECs could limit some resource development and associated impacts on recreation.

5. Direct and Indirect Effects for Travel Management

Proposed management of the following resources, resource uses or programs would have no anticipated effects on Travel Management: Visual Resources, Forest Products, Renewable Energy, Wildlife and Wildlife Habitat, Fisheries Management, Wild and Scenic Rivers, Leasable, Locatable, and Salable Minerals, Social and Economic Conditions, and Subsistence.

a) Direct and Indirect Effects for Travel Management (Common to all Alternatives)

(1) Effects to Travel Management from Soils, Water, Air, and Vegetation Management (Common to All Alternatives)

Soil, water, air, and vegetation management may result in travel restrictions if these resources become excessively degraded. Rehabilitation efforts may close portions of trails. Though uncommon within the planning area due to the remote location of BLM lands, restriction would be short-term and apply only to localized areas.

(2) Impacts to Travel Management from Mineral Activities (Common to All Alternatives)

Locatable Minerals. Pre-ANSCA mining claims exist on BLM lands in planning area. If development continues on these claims increased OHV access and increased air traffic and resulting infrastructure may occur.

Salable Minerals. Some BLM lands are available for salable mineral development, though activities are not expected to occur due to the remote location of BLM lands and the availability of materials on State and private lands. If salable mineral activities were to occur, increased OHV access may be created resulting from the mine area and associated infrastructure necessary to transport mined materials.

(3) Impacts to Travel Management from Special Status Species (Common to All Alternatives)

Travel can be impacted through specific limits on OHV use or on trail development within areas that contain Special Status Species. Proposed or permitted uses such as trail construction or designation would be analyzed and mitigation measures would be developed to minimize impacts. If it is determined that OHV use or trail construction may negatively affect a Special Status Species, the use may be limited to seasons when the species is not present, or the trail relocated to areas where the species is unlikely to be encountered.

(4) Impacts to Travel Management from Travel Management (Common to All Alternatives)

Fixed wing and helicopter access will remain largely unregulated on all BLM lands.

Consistent with ANCSA, the BLM would continue to administer 17(b) easements that access public lands across Native lands. Where 17(b) easements access non-BLM-managed public lands, BLM would attempt to transfer management responsibility of the easement to the appropriate agency. Easement relocation and/or termination would be subject to public involvement. To ensure maintenance of access to public lands as ANCSA conveyances take place 17(b) easements would be extended or new easements reserved as needed. There would be little to no decrease in access currently provided by 17(b) easements under any alternative.

There is no foreseeable road construction unless economically viable resource development (minerals primarily) takes place or the State proposes specific roads for public access in the planning area across BLM lands. A request for road proposal would be acted upon on a case by case basis. If roads were developed, access opportunities for OHV users would increase.

b) Direct and Indirect Effects for Travel Management for Alternative A

Under Alternative A, BLM lands would be designated as "open" for OHV use. No travel restrictions would exist and no weight restrictions would be placed on OHVs.

(1) Effects to Travel Management from Lands and Realty (Alternative A)

Access (Rights of Way). Rights-of-Way are typically used for communication sites, utility corridors, or for access to mining claims, timber resources, and conservation areas, and usually remain under BLM management. Because of retention of ANCSA 17(d)(1) withdrawals, this alternative anticipates very little resource development and associated applications for rights-of-way. Under this Alternative travel management and the amount of travel is expected to remain at current levels.

Withdrawals. ANSCA 17(d)(1) withdrawals would be retained under this Alternative. Most BLM lands would continue to be closed to mineral entry. Travel requirements and infrastructure to support air travel across and to BLM lands is expected to maintain at current levels due to reduced development.

Disposal and Acquisition. No lands have been identified for disposal under this alternative. There would be no impact to travel and travel management. Under Alternative A, acquisitions would continue to be considered on a case-by-case basis as opportunities arise.

(2) Effects to Travel Management from Mineral Activities (Alternative A)

Leasable minerals. ANSCA 17(d)(1) withdrawals would be retained on BLM lands precluding leaseable mineral activities. Travel by OHV and aircraft support of leasable mineral activities would not increase under Alternative A.

Locatable Minerals. ANSCA 17(d)(1) withdrawals would be retained on BLM lands precluding new locatable mineral activities. Impacts to travel management would be similar to that discussed in Effects Common to All Alternatives.

Salable Minerals. ANSCA 17(d)(1) withdrawals would be retained on BLM lands precluding new salable mineral activities. There would be no impacts to travel management.

(3) Effects to Travel Management from Travel Management (Alternative A)

All BLM lands in the planning area are designated as open and no weight restrictions apply to OHV use. Under this Alternative recreational use of OHV would have the least restrictions but may result in short and long term degradation to resources because of the potential wide-spread use of OHVs. This degradation could lead to area closures to OHV use, allowing natural rehabilitation of the landscape.

(4) Effects to Travel Management from Recreation Management (Alternative A)

The Recreation Opportunity Spectrum (ROS) classification will continue as Semi-Primitive Motorized. No facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) would be added to support OHV use. This may inhibit increased OHV use by groups or individuals requiring these facilities. Air traffic in support of recreational uses is not expected to increase under this Alternative.

(5) Effects to Travel Management from Areas of Critical Environmental Concern (ACEC) (Alternative A)

No ACECs would be designated under this alternative. No access would be restricted.

(6) Effects to Travel Management from Wild and Scenic River designation (Alternative A)

No Wild and Scenic River segments would be recommended under this Alternative. No access would be restricted.

c) Direct and Indirect Effects for Travel Management for Alternative B

Under Alternative B, BLM lands would be designated as “open” for OHV use.

(1) Effects to Travel Management from Lands and Realty (Alternative B)

Access (Rights of Way). There are no avoidance or exclusion areas identified within the planning area under this Alternative. Rights-of-Way are typically used for communication sites, utility corridors, or for access to mining claims, and usually remain under BLM management. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Under this Alternative, the use of OHVs and aircraft could increase slightly due to increased development and associated rights-of-way..

Withdrawals. ANCSA 17(d)(1) withdrawals would be revoked under this Alternative. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Some BLM lands would continue to be closed to mineral entry due to Agency withdrawals. However, this alternative anticipates more resource development than any other alternative. Travel requirements and infrastructure to support air travel across and to BLM lands is expected to increase due to increased development.

Disposal and Acquisition. Parcels of land have been identified for disposal under this alternative. Impact to travel and travel management would be dependant on access restrictions by the new land manager. Disposals may create discontinuous routes for OHV users.

(2) Effects to Travel Management from Mineral Activities (Alternative B)

Leasable minerals. Under Alternative B, ANCSA 17(d)(1) withdrawals would be revoked and 1,103,138 acres of BLM lands within the planning area would be open to leasable mineral activities. Travel by OHV and aircraft in support of leasable mineral activities would increase primarily in the Koggiling Creek planning block. Leasable mineral activity has the potential to create impacts to travel management and OHV use, particularly if development occurs in areas that may provide access created by improved infrastructure. Increased air traffic may result from leasable mineral activities. Construction of winter roads, pipelines, powerlines, and other necessary infrastructure would create improved access. Public access into areas of development would have secondary effects on adjacent areas by increasing visitor use and may lead to other developments. Required Operating Procedures have been developed regarding altitude restrictions for aircraft flights to protect wildlife and special status species wildlife (Appendix A).

Locatable Minerals. ANCSA 17(d)(1) withdrawals would be revoked opening 1,102,489 acres of BLM lands to locatable mineral activities. Roads or infrastructure necessary for those operations may cross BLM land. Increased air traffic may result from locatable mineral activities. Increased trails and remote airstrip development would be likely under this alternative. Road development is likely if mineral development takes place. Upon revocation of ANCSA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Though ANCSA 17(d)(1) withdrawals would be lifted, impacts to travel management under Alternative B may increase slightly due to ANILCA 906(e) Top Filings. Required Operating Procedures have been developed regarding altitude restrictions for aircraft flights to protect wildlife and special status species wildlife (Appendix A).

Salable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential salable mineral activities. Impacts to travel management from salable mineral activities would be similar to that discussed in Effects Common to All Alternatives. These impacts may be long-term but small in scale, isolated to the Koggiling Creek planning block, in support of leasable mineral activities. Impacts to travel management from salable mineral activities under Alternative B could be greater than Alternatives A, C, and D because more lands would be available for salable mineral activities.

(3) Effects to Travel Management from Travel Management (Alternative B)

All BLM lands in the planning area would be designated as open and no weight restrictions would apply to OHV use. Under this Alternative recreational use of OHVs would have the least restrictions but may result in short and long term degradation to resources because of the potential wide-spread use of OHVs. This degradation could lead to area closures to OHV use, allowing natural rehabilitation of the landscape.

(4) Effects to Travel Management from Recreation Management (Alternative B)

The Recreation Opportunity Spectrum (ROS) classification would be designated as **Roaded Natural**. Facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) may be added to the range of recreational experiences currently available. The construction of rustic facilities may appeal to some recreation users, while maintenance of roads may provide for improved access to areas within the planning area. The improvements made as **Roaded Natural** ROS classification may provide for increased OHV use. Air travel is not expected to increase due to recreation management.

(5) Effects to Travel Management from Area of Critical Environmental Concern (ACEC) (Alternative B)

No ACECs would be designated under this alternative. There would be no limitations to OHV use.

(6) Effects to Travel Management from Wild and Scenic River designation (Alternative B)

No Wild and Scenic River segments would be recommended under this Alternative. There would be no access restrictions in these river areas.

d) Direct and Indirect Effects for Travel Management for Alternative C

Under Alternative C, BLM lands would be designated as "limited" for OHV use. OHV access would be by designated trails only. A 2,000-lb GVWR weight restriction would be placed on OHVs.

(1) Effects to Travel Management from Lands and Realty (Alternative C)

Access (Rights-of-Way). The Carter Spit and Bristol Bay ACECs would be proposed. These areas would be designated as Right-of-Way avoidance areas, which could restrict OHV access across these lands.

Withdrawals. ANSCA 17(d)(1) withdrawals would be revoked under this Alternative. Upon revocation of ANSCA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Some BLM lands would continue to be closed to mineral entry due to Agency withdrawals.

Disposal and Acquisition. No lands are identified for disposal or land exchange. Impacts would be similar to that discussed under Alternative A.

(2) Effects to Travel Management from Mineral Activities (Alternative C)

Leasable minerals. Under Alternative B, ANSCA 17(d)(1) withdrawals would be revoked and 1,063,129 acres of BLM lands within the planning area would be open to leasable mineral activities. Travel by OHV and aircraft in support of leasable mineral activities would increase primarily in the Koggiling Creek planning block. Leasable mineral activities have the potential to create impacts to travel management and OHV use, particularly if development occurs in areas that may provide access created by improved infrastructure. Construction of winter roads, pipelines, powerlines, and other necessary infrastructure would create improved access. Public access into areas of development would have secondary effects on adjacent areas by increasing visitor use and may lead to other developments.

Locatable Minerals. ANSCA 17(d)(1) withdrawals would be revoked opening 1,102,489 acres of BLM lands to locatable mineral activities. Impacts to travel management would be similar to that discussed in Effects Common to All Alternatives. Upon revocation of ANSCA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Impacts to travel management under Alternative C may increase slightly due to lifting of ANSCA 17 (d)(1) withdrawals.

Salable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential salable mineral activities. Impacts to travel management from salable mineral activities would be similar to that discussed in Effects Common to All Alternatives. These impacts may be long-term but small in scale, isolated to the Koggiling Creek planning block, in support of leasable mineral activities. Impacts to travel management from salable mineral activities under Alternative B could be greater than Alternatives A, C, and D because more lands would be available for salable mineral activities.

(3) Effects to Travel Management from Travel Management (Alternative C)

Under this alternative, all BLM lands would be classified as limited to OHVs and there would be a 2,000 lb. GVWR applied to OHVs. OHVs would be limited to existing trails and in some areas (such as ACECs) trails would be designated. These measures, while not limiting access on existing routes, would prevent unlimited access and cross-country travel.

(4) Effects to Travel Management from Recreation Management (Alternative C)

The Recreation Opportunity Spectrum (ROS) classification will continue as Semi-Primitive Motorized. No facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) would be added to support OHV use. Impacts would be similar to that discussed under Alternative A.

(5) Effects to Travel Management from Areas of Critical Environmental Concern (ACEC) (Alternative C)

Under Alternative C, the Bristol Bay (974,970 acres) and Carter Spit (61,251 acres) ACEC would be proposed. This area would be designated as a right-of-way avoidance area which may prevent or restrict access through the use of special stipulations. A travel management plan would be done for these ACECs, identifying existing routes and designating OHV trails in order to protect relevant resource values. These measures, while not limiting access on existing routes, would prevent unlimited access and cross-country travel.

(6) Effects to Travel Management from Wild and Scenic River designation (Alternative C)

Under Alternative C, BLM would recommend three river segments for Wild and Scenic River designation (Alagnak River, Goodnews River mainstem and Middle Fork Goodnews River). Under Alternative C, increased opportunities for recreation may result from WSR designation. This may include increased

access opportunities by air travel. Required Operating Procedures have been developed regarding altitude restrictions for aircraft flights to protect wildlife and special status species wildlife (Appendix A).

e) Direct and Indirect Effects for Travel Management for Alternative D

Under Alternative D, BLM lands would be designated as “limited” for OHV use. OHV access would be by designated trails only. A 2,000-lb GVWR weight restriction would be placed on OHVs.

(1) Effects to Travel Management from Lands and Realty (Alternative D)

Access (Rights-of-Way). The Carter Spit ACECs would be proposed. This area would be designated as a Right-of-Way avoidance area, which could restrict OHV access within the boundary of the ACEC.

Withdrawals. ANSCA 17(d)(1) withdrawals would be revoked under this Alternative. Upon revocation of ANSCA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Some BLM lands would continue to be closed to mineral entry due to Agency withdrawals. Travel requirements and infrastructure to support air travel across and to BLM lands is expected to increase due to increased development opportunities.

Disposal and Acquisition. No lands are identified for disposal or land exchange. Impacts would be similar to those discussed under Alternative A.

(2) Effects to Travel Management from Mineral Activities (Alternative D)

Leasable minerals. Under Alternative D, ANSCA 17(d)(1) withdrawals would be revoked and 1,101,304 acres of BLM lands within the planning area would be open to leasable mineral activities. Travel by OHV and aircraft in support of leasable mineral activities would increase primarily in the Koggiling Creek planning block. Leasable mineral activities have the potential to create impacts to travel management and OHV use, particularly if development occurs in areas that may provide access created by improved infrastructure. Construction of winter roads, pipelines, powerlines, and other necessary infrastructure would create improved access. Public access into areas of development would have secondary effects on adjacent areas by increasing visitor use and may lead to other developments.

Locatable Minerals. ANSCA 17(d)(1) withdrawals would be revoked opening 1,102,489 acres of BLM lands to locatable mineral activities. Impacts to travel management would be similar to that discussed in Effects Common to All Alternatives. Upon revocation of ANSCA 17(d)(1) withdrawals, Top Filings would attach to lands selected by the State under ANILCA 906(e). The lands would remain closed to mineral entry pursuant to 43 CFR § 2627.4 (b). The high locatable mineral occurrence potential area of Goodnews Bay/Snow Gulch, is Top Filed by the State under 906(e) of ANILCA. Impacts to travel management under Alternative D may increase slightly due to lifting of ANSCA 17 (d)(1) withdrawals.

Salable Minerals. ANSCA 17(d)(1) withdrawals would be lifted from BLM lands within the planning area, opening these lands to potential salable mineral activities. Impacts to travel management from salable mineral activities would be similar to that discussed in Effects Common to All Alternatives. These impacts may be long-term but small in scale, isolated to the Koggiling Creek planning block, in support of leasable mineral activities.

(3) Effects to Travel Management from Travel Management (Alternative D)

Under this alternative, all BLM lands would be classified as limited to OHVs and there would be a 2,000-lb GVWR applied to OHVs. OHVs would be limited to existing trails and in some areas (such as ACECs) trails would be designated. These measures, while not limiting access on existing routes, would prevent unlimited access and cross-country travel.

(4) Effects to Travel Management from Recreation Management (Alternative D)

The Recreation Opportunity Spectrum (ROS) classification will continue as Semi-Primitive Motorized. No facilities enhancement (such as the addition of public use cabins, trails or interpretive panels) would be added to support OHV use. Impacts would be similar to that discussed under Alternative A.

(5) Effects to Travel Management from Areas of Critical Environmental Concern (ACEC) (Alternative D)

Under Alternative D, the Carter Spit (36,220 acres) ACEC would be proposed. This area would be designated as a right-of-way avoidance area which may prevent or restrict access through the use of special stipulations. Few impacts to travel management would result from ACEC designation compared to the current condition.

(6) Effects to Travel Management from Wild and Scenic River designation (Alternative D)

No Wild and Scenic River segments would be recommended under this Alternative. There would be no restrictions to access in these river areas other than the limited OHV classification and the 2,000 lb. weight limit.

6. Direct and Indirect Effects to Minerals

Leasable Minerals

a) Effects to Leasable Minerals for all Action Alternatives

- Oil and gas exploration would occur as described in the Reasonably Foreseeable Development (RFD) Scenario. The following is reasonably foreseeable to occur within the planning area:
 - One seismic survey would occur every five years covering 63 linear miles with a total of 250 miles collected over the next 20 years.
 - Two exploratory gas wells would be drilled during the first five years of the plan. One of the two wells would have an appreciable gas show, resulting in drilling one field delineation well. It is assumed that the discovery field will comprise 1,280 acres and will produce from two wells located on two drill sites, one mile apart.
 - Given a 20-year plan life, it is assumed that a total of six exploration wells would be drilled.
 - One gravel staging area (six acres) would be developed to receive and store equipment for the winter exploration program.
 - One gas field likely would be developed in the Koggiling Creek planning block (this planning block was picked due to its proximity to the Dillingham market). Production from this field would come from the discovery well and delineation well, spaced one mile apart. The drilling of each well would disturb six acres. There would be up to six gas exploration wells plus one additional gas delineation well.
 - The gravel pads would be joined by a 35-foot wide, 5-foot thick gravel road (40,000 cubic yards per mile). The road would only link the drilling pads and one section would also serve as an airstrip. Gravel required for construction would likely be mined during winter months to reduce impacts. The source would likely come from the closest feasible gravel source to the gas field, using one or two separate gravel deposits (10-20 acres in size).
 - A typical life of a producing gas well is 10 to 12 years. Therefore, one or both gas production wells may be plugged after the planning period. Field abandonment may take from 2 – 5 years after production ends.
 - Natural reservoir pressure would be adequate to push the gas through the 3-inch transmission pipeline 40 miles to the Dillingham market. No compression facility would

- be needed. The pipeline would be constructed during the winter months to reduce impacts, dependent upon the presence of sufficient snow cover and sufficiently cold temperatures to freeze the ground.
- One of the production wells would serve as an in-field underground injection well (annular injection) to dispose of drilling waste, wastewater, spent fluids, chemicals and the produced water.
- When there is insufficient snow cover for oil and gas related operations, low ground pressure vehicles will be used in conjunction with air support.
- This level of development is assumed for the purposes of impact analysis in the EIS. Actual exploration, development, and production may vary considerably based on exploration results, price of oil and gas, and marketability. Additionally, to market the gas in Dillingham, the current diesel plant would need to be converted to gas. For this to be economical, funding would need to come from energy subsidies derived from the State of Alaska or the Federal Government.
- An ongoing joint State/Federal program to determine the feasibility of developing coal bed natural gas (CBNG) for the benefit of rural communities does not plan to explore the Bristol Bay area at this time. If CBNG were available close to a rural community, the development would occur on non-BLM lands. BLM lands in the planning area are not in proximity to the three largest communities – Dillingham, Naknek and King Salmon. Transportation costs associated with building a gas pipeline would render CBNG development uneconomical.

b) Effects to Leasable Minerals for Alternative A

There are no active oil and gas leases in the planning area and no oil and gas leasing would occur under Alternative A. BLM lands within the planning area would remain closed to leasable mineral activities due to current withdrawals described in ANSCA 17(d)(1). Leasing may take place in the event of drainage of oil and gas resources from adjacent development. Therefore, under this Alternative, no oil and gas exploration and development would occur, rendering these resources unavailable during the life of the plan. The RFD for leasable minerals anticipates leasable mineral development to occur only in the Koggiling Creek planning block. Alternative A would provide the most restriction to leasable mineral activities, compared to Alternatives B, C, and D, because leasable mineral activities are restricted in the Koggiling Creek planning block.

c) Effects to Leasable Minerals for Alternative B

Under Alternative B, all existing ANSCA 17(d)(1) withdrawals would be revoked. Approximately 1,103,138 acres of BLM lands and any State-selected or Native-selected lands whose selection is relinquished or revoked, would be open to mineral entry subject to Stipulations and ROPs (Appendix A). There would be no restriction under this Alternative for seasonal closures or no surface occupancy. Additionally, Oil and Gas Lease Stipulations #5, #6, and #8 would not be applicable under this Alternative. Agency withdrawals would close approximately 3,318 acres to leasing, as described within specific PLOs. Closing this acreage would preclude oil and gas exploration and development, rendering these resources unavailable during the life of the plan. Alternative B would provide fewer restrictions to leasable mineral activities compared to Alternatives A, C, and D. Other than provided in ROPs and Stipulations, Alternative B provides no restrictions to leasable mineral development in the Koggiling Creek planning block. Because leasable mineral development is anticipated in the Koggiling Creek planning block only, impacts to leasable mineral activities resulting from Alternative B would be similar to that discussed in the Effects Common to All Action Alternatives section.

d) Effects to Leasable Minerals for Alternative C

Approximately 1,063,129 acres of BLM lands and any State or Native-selected lands (785,341 acres) whose selection is relinquished or revoked, would be open to leasable mineral activities subject to ROPs and Stipulations (Appendix A).

Two ACECs (Carter Spit 61,251 acres and Bristol Bay 974,970 acres) would be proposed. ANSCA 17(d)(1) withdrawals would only be retained within the proposed Carter Spit ACEC to provide added protection to federally-listed migratory bird species. Leasable mineral activities are not expected to occur in the Goodnews Bay planning block according to the Reasonable Forseeable Development scenario. The Bristol Bay ACEC would be open to leasable mineral activities subject to seasonal constraints to protect caribou habitat on identified aggregation areas. As a result leasable mineral activities will be closed from May 20 through August 15 (Appendix A, Oil and Gas Lease Stipulation 6). An additional closure to protect calving caribou will restrict exploration and development activities from May 1 through June 15 (Appendix A, Oil and Gas Lease Stipulation 5). Lands under seasonal closure will be dependant upon the location of the caribou aggregations.

Existing ANCSA 17(d)(1) withdrawals totaling 12,210 acres would be retained on proposed Wild River segments of the Alagnak, Goodnews mainstem, and Goodnews Middle Fork until Congressional action could be completed. None of these river segments are located in the Koggiling Creek Planning block where leasable mineral activities are projected to occur. Additional Agency withdrawals (3,318 acres) would exclude leasable mining development. The acreage closed to leasable mineral activities would render these resources unavailable during the life of the plan.

Approximately 1,910 acres of the planning area would be open to leasing, subject to major No Surface Occupancy (NSO) constraints. Areas subject to NSO include a 300 foot buffer on either side of the East and South Fork Arolik, Faro Creek, South Fork Goodnews River, and Klutuk Creek (Appendix A, ROP FW-6a and Oil and Gas Lease Stipulation 8). These rivers are located within the Goodnews and Klutuk Creek planning blocks. According to the RFD for Leasable Minerals, neither the Goodnews nor Klutuk Creek planning blocks are expected to have leasable mineral development. Oil and gas development in an NSO area could require directional drilling to extract hydrocarbon resources. Should areas with major constraints occur beyond the technically feasible reach for directional drilling, some hydrocarbon resources may be rendered unrecoverable. Product price fluctuations may require premature abandonment that would decrease the recoverability of the leasable resource. An NSO buffer of any width could potentially limit exploration and development. For example, if an exploration target was determined to be within the NSO zone, the added cost of directional drilling could render the project uneconomical, and therefore miss the discovery. Additionally, if a shallow target pool were previously defined through geophysical exploration, it could be technically unfeasible for an operator to directionally drill such a reservoir. Consequently, these resources would be unavailable during the life of the plan. Alternative C would provide more restrictions to leasable mineral activities compared to Alternatives B and D but fewer restrictions compared to Alternative A. Other than provided in ROPs and Stipulations, Alternative C provides no restrictions to leasable mineral development in the Koggiling Creek planning block. Because leasable mineral development is anticipated in the Koggiling Creek planning block only, impacts to leasable mineral activities resulting from Alternative C would be similar to that discussed in the Effects Common to All Action Alternatives section.

e) Effects to Leasable Minerals for Alternative D

Approximately 1,101,304 acres of BLM lands and any State- or Native-selected lands (817,464 acres selected) whose selection is relinquished or revoked would be open to mineral entry subject to Stipulations and Required Operating Procedures (ROPs).

Existing ANCSA 17(d)(1) withdrawals would be revoked, including lands within the one proposed ACEC (Carter Spit, 36,220 acres). These lands would be open to leasable activities, managed by adaptable management and would be subject to ROPs and Stipulations that include seasonal restrictions to protect Federally listed migratory bird species and caribou (Appendix A).

Acreage available and subject to minor (seasonal) constraints is roughly 36,220 acres. To protect caribou habitat on identified aggregation areas, oil and gas exploration and development activities would be closed from May 20 through August 15. An additional closure to protect calving caribou would restrict exploration and development activities from May 1 through June 15. These closures would be dependant upon the actual location of caribou aggregation (Appendix A, ROP FW-3b and Oil and Gas Stipulations 5 and 6). These constraints would limit exploration and development during specific time periods and increase recovery costs.

Approximately 1,910 acres of the planning area would be open to leasing, subject to major No Surface Occupancy (NSO) constraints. Areas subject to NSO include a 300 foot buffer on either side of the East and South Fork Arolik, Faro Creek, South Fork Goodnews River, and Klutuk Creek (Appendix A, Stipulation 8). These rivers are located within the Goodnews or Klutuk Creek planning blocks. According to the RFD for Leasable Minerals, neither the Goodnews nor Klutuk Creek planning blocks are expected to have leasable mineral development.

Approximately 3,318 acres of existing Agency withdrawals would be closed to leaseable mineral activities as described within specific PLOs.

Leasable oil and gas potential does exist on BLM lands. Exploration and development would proceed at the level described in the Reasonably Foreseeable Development Scenario under the *Analysis Assumptions and Guidelines* for leasable minerals. Other than provided in ROPs and Stipulations, Alternative D provides no restrictions to leasable mineral development in the Koggiling Creek planning block. Because leasable mineral development is anticipated in the Koggiling Creek planning block only, impacts to leasable mineral activities resulting from Alternative D would be similar to that discussed in Effects Common to All Action Alternatives section. Should Federal leasing take place, the BLM Alaska State Office would assume lease administration responsibilities and oversight of field operations.

Locatable Minerals

a) Effects to Locatable Minerals for All Alternatives

- Placer Mining - Placer mining for gold and platinum is the most common type of mining that occurs in the planning area. Placer platinum is the most likely development target while placer gold is the most likely target for exploration and development. Mineral resource development in the planning area is occurring primarily on State, Native, and private lands. This can be attributed to the patenting of large numbers of Federal mining claims staked during the gold rush era and to the State and Native Corporations targeting mineral resources for selection under their respective entitlement statutes.
- Additional exploration should prove that development of placer properties in the Bonanza Creek, Goodnews Bay/Snow Gulch, Iliamna/Fog, Kijik Lake, Platinum, and Shotgun Hills areas within the planning area are feasible. These deposits would probably be developed either as a small surface open-cut sluice box operation or as a bucket-line dredge operation (Goodnews Bay Platinum Mine).
- Placer mining activity in the planning area is expected to occur in the Snow Gulch part of the Goodnews Bay/Snow Gulch area on BLM lands. There are expected to be 1 to 3 small scale placer operations employing 3 to 5 people at each location. Activity would most likely occur on Barnum Creek, Domingo Creek, Faro Creek, or on Jacksmith Creek.

- Hard Rock Exploration and Development - Historic producers of hard rock for mercury operated on a small scale in the early part of the twentieth century. Today, development projects involve gold and copper from developing new and old prospects. Most of these are located on State and Native lands in the Iliamna/Kvichak area. Hard rock exploration is up in the region, generated by the increasing price of gold and increased interest in mineral occurrences on State and Native lands.
- Elsewhere around the State, exploration has focused on deposits of rare metals (nickel and platinum group metals [PGM]). Exploration results indicate that there is potential for a significant discovery of these metals. This interest, coupled with the rising price of platinum, has sparked recent exploration efforts in Goodnews Bay along the Salmon River where platinum has historically been mined by placer methods.
- Additional exploration should prove that development of lode properties in the Bonanza Creek, Goodnews Bay/Snow Gulch, Iliamna/Fog, Iliamna/Kvichak, Kasna Creek, Kemuk Mountain, Kijik Lake, Pebble Copper, Platinum, Shotgun Hills, and Sleitat Mountain areas in the planning area are feasible. These deposits would probably be developed either as open pit or as cut and fill underground mines. Surface disturbance will vary depending on the mine design, construction of roads, power line corridors, selection of tailing disposal method, and other factors. An order of magnitude estimate would be in the range of 1,300-3,400 acres. Road building, airstrips, and associated material sites account for the largest surface disturbance followed by mine, mill, tailings disposal site, and camp facilities. While most of these disturbances would occur on State or Native lands, some road construction or power lines could cross BLM land.
- The Pebble property, on State lands near Lake Iliamna, is a proposed hard rock, combination open pit and underground mine with a mill that combines free milling processes with floatation and vat chemical leach circuits to recover gold and copper. This mill could include ore from locations situated close by, such as the Pebble South and the Big Chunk (BC) properties. More than 100 employees would contribute to the Iliamna area economy and the mine mill complex could draw power from the Homer utility grid.

a) Effects to Locatable Minerals for Alternative A

Under the No Action Alternative, 963,862 acres of BLM land in the planning area are currently closed to mineral entry by ANCSA 17 (d)(1) withdrawals and Agency withdrawals. Approximately 138,627 acres are currently open for mineral entry. If current State- or Native-selected lands are not conveyed and returned to BLM management, they would be opened for mineral entry. Pre-ANCSA mining claims exist on BLM lands. Locatable lode mineral activity is occurring at the Iliamna Project, D Block and Iliamna Project, and H Block locations on State-selected land. Placer activity is conducted on the Arolik River on Native-selected land and the Salmon River (Federal mining claims) on Native land. All currently active Federal and State mining claims and 2005 APMA's are in the Bonanza Creek, Goodnews Bay/Snow Gulch, Iliamna/Kvichak, Kemuk, Pebble Copper, Platinum, and Shotgun Hills areas. Current mineral activities would occur in the Iliamna/Kvichak and Platinum areas.

If locatable mineral activity were to occur on every active Federal mining claim on BLM land, an estimated total of 23 acres (5 lode and 18 placer) could potentially be disturbed in the planning area. No disturbance would occur on State- or Native-selected lands. Under this Alternative no further disturbance would be anticipated until the conveyance process is completed. Future mineral activities could be expected to occur on those lands returning to BLM management.