APPENDIX L

ASAP Air Quality Emission, Regulatory, and Support Documentation

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ALASKA LNG

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RESOURCE REPORT NO. 9

AIR AND NOISE QUALITY

PUBLIC

DOCUMENT NUMBER: USAI-PE-SRREG-00-000009-000

Local windflow patterns tend to be channeled or diverted by topographical features, such as mountain passes, valleys, and waterbodies. Thus, due to the complex terrain found in the Brooks and Alaska Ranges, wind speeds and directions are expected to be highly localized due to long-valley channeling and cross-valley slope flow. Wind roses for individual project site locations are provided in the modeling reports in Appendices D, E, and F.

9.2.1.4.5 Fog, Clouds, and Visibility

Fog forms when the dew point temperature equals the ambient temperature. Except on the North Slope, fog rarely forms in the summer in Alaska because the ambient temperature is significantly higher than the dew point temperature, even near waterbodies. Spring and fall are the times of the year when fog is more likely to form, especially in areas near large waterbodies that have higher dew point temperatures. Fog is almost always less than 300 feet thick, so the surrounding uplands are usually clear, with warmer temperatures. A dense "ice fog," composed of suspended fine ice crystals, develops at times in the Interior of Alaska and on the North Slope, and visibility in the ice fog is sometimes quite low, hindering aircraft operations for as much as a day in severe cases (WRCC, 2011).

Central Interior Alaska winter temperatures can reach low enough levels (-20 °F to -60 °F) to create ice fog on a fairly frequent basis. As cold air is denser, cold high-pressure systems are formed, which are very difficult to displace. Thus, stable conditions with no wind can persist for several days to weeks, causing long-lasting ice fogs in Interior locations (NCDC, 2011). Cold snaps in Fairbanks accompanied by winter ice fog generally last about a week, but these conditions can last up to three weeks in unusual situations.

Cloud cover and storm observations are also limited in the Project vicinity. In Fairbanks and Bettles, cloudy days occur for approximately 200 days of the year, while 90 days per year are partly cloudy, and approximately 70 days are clear (NCDC, 2011).

9.2.2 Existing Ambient Air Quality

9.2.2.1 Ambient Air Quality Standards

Federal and state air emissions regulations are designed to ensure that new sources do not cause or contribute to an exceedance of ambient standards for criteria air pollutants. The criteria pollutants are as follows: sulfur dioxide (SO_2); carbon monoxide (CO); nitrogen dioxide (NO_2); ozone (O_3); particulate matter having an aerodynamic diameter of 10 microns or less (PM_{10}); particulate matter having an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$); and lead (Pb).

EPA has established National Ambient Air Quality Standards (NAAQS) for these seven pollutants. The NAAQS are set at levels EPA believes are necessary to protect public health (primary standards) and welfare (secondary standards).

The Alaska Department of Environmental Conservation (ADEC) has established similar ambient air quality standards referred to as Alaska Ambient Air Quality Standards (AAAQS). AAAQS are similar to the federal NAAQS for criteria pollutants, except that ADEC has yet to remove the 24-hour and annual standards for SO_2. ADEC also has an eight-hour AAAQS for ammonia. Table 9.2.2-1 lists both the federal and state ambient air quality standards.

TABLE 9.2.2-1

National and Alaska Ambient Air Quality Standards

Air Pollutant	Averaging Period	NAAQS	AAAQS
Sulfur Dioxide	1-Hour[a]	75 ppbv	196 µg/m^3
	3-Hour[b]	0.5 ppmv	1,300 µg/m^3
	24-Hour[b]	---	365 µg/m^3
	Annual	---	80 µg/m^3
Carbon Monoxide	1-Hour[b]	35 ppmv	40 mg/m^3
	8-Hour[b]	9 ppmv	10 mg/m^3
Nitrogen Dioxide	1-Hour[c]	100 ppbv	188 µg/m^3
	Annual	53 ppbv	100 µg/m^3
Ozone	8-Hour[d]	0.070 ppmv	0.070 ppmv
Particulate Matter less than 10 Microns	24-Hour[b]	150 µg/m^3	150 µg/m^3
Particulate Matter less than 2.5 Microns	24-Hour[e]	35 µg/m^3	35 µg/m^3
	Annual	12 µg/m^3	12.0 µg/m^3
Lead	Rolling 3-Month Average	0.15 µg/m^3	0.15 µg/m^3
Ammonia	8-Hour[b]	----	2.1 mg/m^3

Sources: EPA 2015a; ADEC 2016a

Abbreviations:

--- = Not applicable

µg/m^3 = micrograms per cubic meter

mg/m^3 = milligrams per cubic meter

ppbv = parts per billion by volume

ppmv = parts per million by volume

Notes:

[a] Standard is attained when the 3-year average of the annual, 99th percentile, daily maximum, one-hour concentration is less than or equal to 75 ppb, or 196 µg/m^3.

[b] Not to be exceeded more than once in a year.

[c] Standard is attained when the 3-year average of the annual, 98th percentile, daily maximum, one-hour concentration is less than or equal to 100 ppb, or 188 µg/m^3.

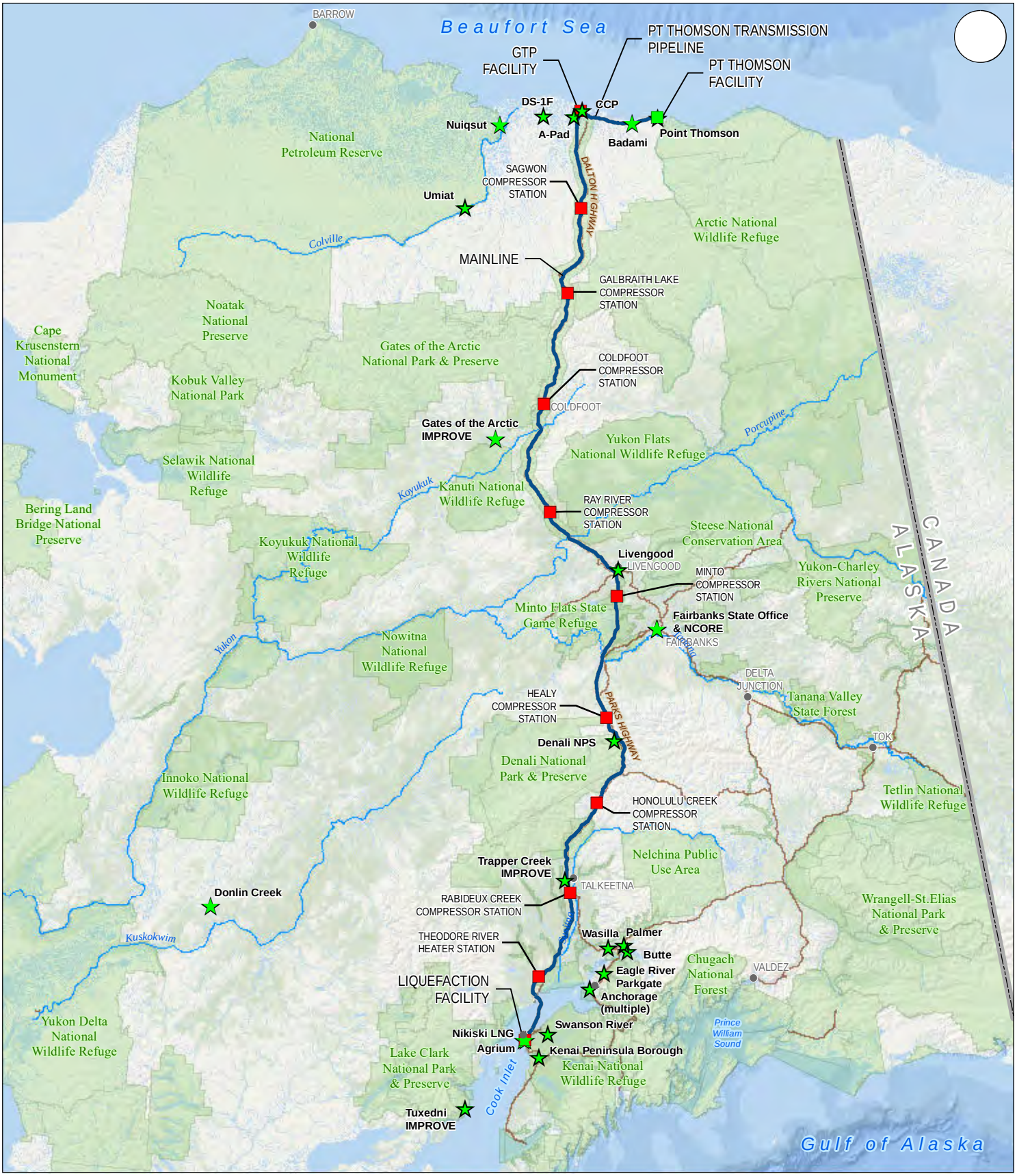
[d] Standard is attained when the 3-year average of the annual fourth-highest daily maximum eight-hour average ozone concentration is less than or equal to 0.070 ppm.

[e] Standard is attained when the 3-year average of the annual 98th percentile 24-hour concentration is less than or equal to 35 µg/m^3.

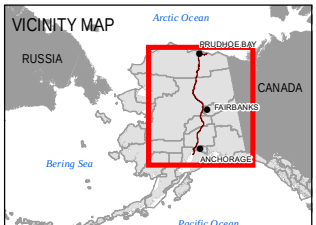
9.2.2.2 Existing Air Quality Concentrations

Air quality data were gathered from all publicly available sources in the Project vicinity and evaluated for data quality. Figure 9.2.2-1 shows the locations of monitoring stations with data that are reasonably current (generally collected since 2010), complete (80 percent or better data capture), and publicly available. Existing air quality data from these stations, which depict the regional air quality conditions, are summarized in Appendix B.

These monitoring stations are operated by private entities and local, state, or federal agencies. Privately collected datasets are generally for Prevention of Significant Deterioration (PSD) monitoring programs.



VICINITY MAP



LEGEND

- Project Facility
- Existing Facility
- Ambient Air Quality Monitoring Stations
- Alaska LNG Rev C2 Route
- Major Highways
- Major Rivers
- State and Federal Conservation Lands

0 25 50 100 150 Miles

X:\AKLNG\Resource Reports\RR09\Figure 9_2_2-1 Ambient Air Quality Monitoring Stations.mxd

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AMBIENT AIR QUALITY MONITORING STATIONS

FIGURE 9.2.2-1

ALASKA LNG

Local, state, and federal monitoring stations include State and Local Air Monitoring Stations (SLAMS) (EPA 2014a), Interagency Monitoring of Protected Visual Environments (IMPROVE), National Core Network (NCore), and Clean Air Status and Trends Network (CASTNET). Certain SLAMS $PM_{2.5}$ monitoring data are also part of the Chemical Speciation Network (CSN). Although data from the SLAMS and related ambient air monitoring networks may not necessarily meet all of the PSD criteria, data collected at these stations are valuable in describing the existing ambient air quality of the Project area, particularly because much of the Project area in the vicinity of the Mainline route has limited air quality monitoring data available.

Some data presented in Appendix B were collected by Special Purpose Monitors (SPMs). However, SPM data are not to be used for NAAQS compliance demonstrations without review and acceptance as required in 40 C.F.R. 58.20. The concentrations measured by SPMs have been included in this Resource Report to ensure a complete presentation of existing air quality.

Monitoring data from Appendix B are summarized in Tables 9.2.2-2, 9.2.2-3, and 9.2.2-4 for the North Slope, Interior Alaska and Alaska Range, and Southcentral Alaska and Cook Inlet. Those tables also provide the most representative air quality level that is available from existing data at the time of this submittal. However, updates to these air quality levels may be provided from later monitoring efforts as background concentrations for the required air quality analyses. For the most part, the data demonstrate that existing air quality complies with the ambient standards. Data collected at certain stations indicate levels above the air quality standards, but which do not necessarily indicate an exceedance of the standards. While these data are included for completeness, the higher levels are not necessarily representative of air quality at Project facilities, but rather reflect local circumstances (such as the Fairbanks $PM_{2.5}$ nonattainment area [see Section 9.2.2.3.2]) or exceptional events (such as forest fires).

There are seven available datasets on the North Slope, which provide a good representation of air quality at North Slope oil and gas production facilities as well as remote areas.

In the Interior, there are limited data. The most complete Interior dataset is being collected in the Fairbanks urban area, which is nonattainment for $PM_{2.5}$ and not representative of the Project Mainline corridor. Outside of Fairbanks and Healy, Interior Alaska is sparsely populated with few existing significant sources of air pollutants near the Project area.

In Southcentral Alaska, there are several data collection programs with special purposes, but few complete PSD monitoring programs. Many of these monitoring programs were established to gather specific data for the Anchorage urban area or to characterize fugitive dust issues in the Matanuska Valley. Thus, datasets should be carefully evaluated before identifying the best one for representing air quality at Project facilities. Rather than using existing publicly available datasets to characterize ambient air quality in the vicinity of the Liquefaction Facility, the Project initiated its own background data collection program beginning on January 1, 2015. The air quality station location is identified as the background station in Figure 9.2.2-2. Air quality data being collected at this station includes CO, NO_2, SO_2, O_3, PM_{10}, and $PM_{2.5}$. Prior to choosing this monitoring site and the air quality parameters, the Project representatives consulted with and received approval from ADEC (Alaska LNG Project, 2015). Data from the background station are included in this Resource Report for the Liquefaction Facility (see Appendix B).

Representative air quality data for Project impact analyses are presented as part of the impact assessment in Section 9.2.5.

TABLE 9.2.2-2

Monitored Air Quality Data from the North Slope

Air Pollutant	Averaging Period	Range of Maximum Monitored Concentrations[a]	Representative Background Concentration at GTP	Standard
Sulfur Dioxide	1-Hour[b]	6.29 – 75.9 µg/m^3	9.39 µg/m^3	196 µg/m^3
	3-Hour	5.5 – 65.5 µg/m^3	20.96 µg/m^3	1,300 µg/m^3
	24-Hour	3.0 – 26.0 µg/m^3	8.12 µg/m^3	365 µg/m^3
	Annual	0.3 – 5.2 µg/m^3	1.8 µg/m^3	80 µg/m^3
Carbon Monoxide	1-Hour	0.0022 – 1.36 mg/m^3	1.15 mg/m^3	40 mg/m^3
	8-Hour	0.0013 – 1.15 mg/m^3	1.15 mg/m^3	10 mg/m^3
Nitrogen Dioxide	1-Hour[c]	61.69 – 471.4 µg/m^3	61.69 µg/m^3	188 µg/m^3
	Annual	1.88 – 20.6 µg/m^3	6.0 µg/m^3	100 µg/m^3
Ozone	8-Hour[d]	0.047 – 0.056 ppmv	0.056 ppmv	0.070 ppmv
Particulate Matter less than 10 Microns	24-hour	35.6– 70 µg/m^3	50.0 µg/m^3	150 µg/m^3
Particulate Matter less than 2.5 Microns	24-Hour[e]	9 – 22.5 µg/m^3	15 µg/m^3	35 µg/m^3
	Annual	2.1 – 3.7 µg/m^3	3.7 µg/m^3	12 µg/m^3

Source: See Appendix B for the datasets and methodology for selection of monitored concentrations.

Abbreviations:

µg/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
ppmv – parts per million by volume

Notes:

[a] Concentrations for the short-term standards (1 to 24 hours) are based on the design calculations for the standards. See notes in Table 9.2.2-1.

[b] The one-hour SO_2 average shown in the table reflects the annual 99th percentile of the daily maximum one-hour SO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[c] The one-hour average shown in the table reflects annual 98th percentile of the daily maximum one-hour NO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[d] The annual fourth-highest daily maximum eight-hour O_3 concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[e] The annual 98th percentile $PM_{2.5}$ concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

TABLE 9.2.2-3

Monitored Air Quality Data from Interior Alaska and the Alaska Range

Air Pollutant	Averaging Period	Range of Maximum Monitored Concentrations[a]	Standard
Sulfur Dioxide	1-Hour[b]	146.5 µg/m^3	196 µg/m^3
	3-Hour	5.33 – 131 µg/m^3	1,300 µg/m^3
	24-Hour	5.33 – 85.9 µg/m^3	365 µg/m^3
	Annual	1.33 – 33.2 µg/m^3	80 µg/m^3
Carbon Monoxide	1-Hour	0.7 – 5.41 mg/m^3	40 mg/m^3
	8-Hour	0.3 – 3.21 mg/m^3	10 mg/m^3
Nitrogen Dioxide	1-Hour[c]	26.32 µg/m^3	188 µg/m^3
	Annual	1.91 µg/m^3	100 µg/m^3
Ozone	8-Hour[d]	0.054 – 0.064 ppmv	0.070 ppmv
Particulate Matter less than 10 Microns	24-hour	15 – 111 µg/m^3	150 µg/m^3
Particulate Matter less than 2.5 Microns	24-Hour[e]	11.2 – 83.2[f] µg/m^3	35 µg/m^3
	Annual	1.45 – 13.2[f] µg/m^3	12 µg/m^3

Source: See Appendix B for the datasets and methodology for selection of monitored concentrations.

Abbreviations:

µg/m^3 – micrograms per cubic meter

mg/m^3 – milligrams per cubic meter

ppmv – parts per million by volume

Notes:

[a] Concentrations for the short-term standards (1 to 24 hours) are based on the design calculations for the standards. See notes in Table 9.2.2-1

[b] The one-hour SO_2 average shown in the table reflects the annual 99th percentile of the daily maximum one-hour SO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[c] The one-hour average shown in the table reflects annual 98th percentile of the daily maximum one-hour NO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[d] The annual fourth-highest daily maximum eight-hour O_3 concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[e] The annual 98th percentile $PM_{2.5}$ concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[f] Includes measured concentrations from the Fairbanks urban $PM_{2.5}$ nonattainment area.

Note: See Section 9.2.5.2 for concentrations at each compressor station site.

TABLE 9.2.2-4

Monitored Air Quality Data from Southcentral Alaska and Cook Inlet

Air Pollutant	Averaging Period	Range of Maximum Monitored Concentrations[a]	Representative Background Concentration at the LNG Plant	Standard
Sulfur Dioxide	1-Hour[b]	8.1 µg/m^3	5.0 µg/m^3	196 µg/m^3
	3-Hour	5.0µg/m^3	5.0 µg/m^3	1,300 µg/m^3
	24-Hour	2.4 µg/m^3	2.4 µg/m^3	365 µg/m^3
	Annual	0.0 µg/m^3	0.0 µg/m^3	80 µg/m^3
Carbon Monoxide	1-Hour	1.1– 9.39 mg/m^3	1.145 mg/m^3	40 mg/m^3
	8-Hour	1.1 – 7.9 mg/m^3	1.145 mg/m^3	10 mg/m^3
Nitrogen Dioxide	1-Hour[c]	35.7 – 222.6[f] µg/m^3	32.3µg/m^3	188 µg/m^3
	Annual	2.6– 28.2 µg/m^3	2.6µg/m^3	100 µg/m^3
Ozone	8-Hour[d]	0.048 – 0.061 ppmv	0.047ppmv	0.070 ppmv
Particulate Matter less than 10 Microns	24-hour	35.2 – 376[g] µg/m^3	40 µg/m^3	150 µg/m^3
Particulate Matter less than 2.5 Microns	24-Hour[e]	8.7 – 70.7[g] µg/m^3	12µg/m^3	35 µg/m^3
	Annual	0.94 – 7.94[g] µg/m^3	3.7µg/m^3	12 µg/m^3

Source: See Appendix B for the datasets and methodology for selection of monitored concentrations.

Abbreviations:

µg/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
ppmv – parts per million by volume

Notes:

[a] Concentrations for the short-term standards (1 to 24 hours) are based on the design calculations for the standards. See notes in Table 9.2.2-1

[b] The one-hour SO_2 average shown in the table reflects the annual 99th percentile of the daily maximum one-hour SO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[c] The 1-hour average shown in the table reflects annual 98th percentile of the daily maximum one-hour NO_2 concentration averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[d] The annual fourth-highest daily maximum eight-hour O_3 concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[e] The annual 98th percentile $PM_{2.5}$ concentrations averaged over the specified monitoring period are provided for informational purposes; and for PSD-quality determination purposes for future permitting projects.

[f] Includes measured concentrations from the Anchorage urban area.

[g] Includes data from several special purpose monitoring stations in Anchorage and the Matanuska Valley.

APPENDIX B AIR QUALITY MONITORING DATA WITHIN THE PROJECT VICINITY

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1.0 SUMMARY

Existing air quality data within the Project vicinity have been compiled and are provided in this appendix. The data presented were collected at monitoring stations operated by private entities and local, state, or federal agencies. In general, all data that pass the screening criteria (proximity, completeness, currentness) are included in this appendix regardless of whether they are representative of air quality near Project facilities.

Privately collected datasets are usually judged against the Prevention of Significant Deterioration (PSD) criteria for data quality and completeness. ADEC often reviews these datasets to determine whether they can be validated as PSD-quality. Local, state, and federal monitoring stations are not normally reviewed to determine if they meet the PSD criteria. Rather, these stations are operated consistent with the data quality objectives of the respective monitoring programs. Those programs identified in the Project vicinity include State and Local Air Monitoring Stations (SLAMS), Interagency Monitoring of Protected Visual Environments (IMPROVE), National Core Network (NCore), and Clean Air Status and Trends Network (CASTNET). Some SLAMS that monitor $PM_{2.5}$ are also part of the Chemical Speciation Network (CSN). Although the data from the SLAMS and other ambient air monitoring networks may not necessarily meet all of the PSD criteria, data collected at these stations are valuable in describing the existing ambient air quality of the Project vicinity, particularly because much of the Project area is sparsely inhabited and has limited air quality monitoring data available. Some data presented in this appendix were collected by Special Purpose Monitors (SPM). SPM data are not to be used for NAAQS compliance demonstrations (EPA, 2009). The concentrations measured by SPMs have been included to ensure a complete and credible synopsis of existing air quality in the Project vicinity.

Figure 9.2.2-1 located in Resource Report No. 9 presents the location of each station listed in Table 1. Table 1 is organized by monitoring station and grouped for the North Slope, Interior Alaska and the Alaska Range, and Southcentral Alaska and Cook Inlet. Each of these geographic areas is quite large and the available data is concentrated around existing infrastructure or communities.

Monitoring stations included in the table were selected based on proximity to the Project corridor. Unless otherwise noted, data represent the most recent five years of available data and spans the timeframe from 2010 through 2014. The ambient air quality data discussed in this section for specific locations are based on maximum observed values for each pollutant and averaging period, except as noted. The concentrations are given in measurement units consistent with the relevant AAAQS.

Several of the public monitoring stations included continuous and filter monitors for the determination of $PM_{2.5}$ concentrations. Data from the continuous monitors were selected when available because those data sets have more data points.

Two privately collected data sets older than 2010 are included in Table 1. The 2008 Donlin Creek data are included to present ambient area quality values likely representative of remote, or rural, areas in Interior and Southcentral Alaska. Additionally, the 2008 through 2009 Swanson River data are included due to the proximity of the Swanson River monitoring station to the Liquefaction Facility site. The Swanson River dataset is also the only identified dataset collected in the Kenai National Wildlife Refuge.

All data available in or near the Project area were reviewed for possible inclusion in this table. The privately collected datasets have either been determined to be PSD quality, or are expected to receive a PSD quality determination, except as noted. An observation percent (data capture rate) of 80 percent was applied to select local, state, and federally collected data for the Table 1 unless otherwise noted.

The Applicant initiated an ambient air quality data collection program in the vicinity of the Liquefaction Facility. The air quality station location is shown in Figure 9.2.2-2 of Resource Report No. 9. The data collection program began on January 1, 2015 and was completed on June 30, 2016. Air quality data collected at Nikiski include CO, NO_2, SO_2, O_3, PM_{10}, and $PM_{2.5}$. Prior to choosing this monitoring site and the air quality parameters, the Project consulted with ADEC to obtain approval for the station location and monitoring protocols. Subsequently ADEC approved data covering the period of January 1, 2015 through December 31, 2015 that are used to represent the Liquefaction Facility site.

Table 1 presents maximum monitored concentrations from these datasets. Table 2 provides background concentrations for ambient air quality impact analyses that have been calculated separately following standard EPA protocols. Background concentrations representative of Project facilities are provided in Table 2.

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
ALASKA NORTH SLOPE								
CCP	Private - PSD	SO_2	1-Hour	33.7	$\mu g/m^3$	1/1/2010	12/31/2014	
CCP	Private - PSD	SO_2	3-Hour	40.3	$\mu g/m^3$	1/1/2010	12/31/2014	
CCP	Private - PSD	SO_2	24-Hour	26.0	$\mu g/m^3$	1/1/2010	12/31/2014	
CCP	Private - PSD	SO_2	Annual	5.2	$\mu g/m^3$	1/1/2010	12/31/2014	
CCP	Private - PSD	CO	1-Hour	1.15	mg/m^3	1/1/2014	12/31/2014	l
CCP	Private - PSD	CO	8-Hour	1.15	mg/m^3	1/1/2014	12/31/2014	l
CCP	Private - PSD	NO_2	1-Hour	206.8	$\mu g/m^3$	1/1/2010	12/31/2014	i
CCP	Private - PSD	NO_2	Annual	20.6	$\mu g/m^3$	1/1/2010	12/31/2014	
CCP	Private - PSD	O_3	8-Hour	0.055	ppm	1/1/2010	12/31/2014	
CCP	Private - PSD	PM_{10}	24-Hour	60.0	$\mu g/m^3$	1/1/2010	12/31/2014	l
CCP	Private - PSD	$PM_{2.5}$	24-Hour	22.5	$\mu g/m^3$	1/1/2010	12/31/2014	l
CCP	Private - PSD	$PM_{2.5}$	Annual	3.7	$\mu g/m^3$	1/1/2010	12/31/2014	l
DS-1F	Private - PSD	SO_2	1-Hour	8.7	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	SO_2	3-Hour	6.4	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	SO_2	24-Hour	3.0	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	SO_2	Annual	0.4	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	CO	1-Hour	1.360	mg/m^3	7/1/2012	6/30/2013	
DS-1F	Private - PSD	CO	8-Hour	0.173	mg/m^3	7/1/2012	6/30/2013	
DS-1F	Private - PSD	NO_2	1-Hour	61.9	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	NO_2	Annual	4	$\mu g/m^3$	7/1/2012	6/30/2013	
DS-1F	Private - PSD	O_3	8-Hour	0.051	ppmv	7/1/2012	6/30/2013	
DS-1F	Private - PSD	PM_{10}	24-Hour	47	$\mu g/m^3$	7/1/2012	6/30/2013	

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
DS-1F	Private - PSD	$PM_{2.5}$	24-Hour	11	µg/m^3	7/1/2012	6/30/2013	
DS-1F	Private - PSD	$PM_{2.5}$	Annual	2.8	µg/m^3	7/1/2012	6/30/2013	
A-Pad	Private - PSD	SO_2	1-Hour	22.20	µg/m^3	1/1/2010	12/31/2014	l
A-Pad	Private - PSD	SO_2	3-Hour	20.96	µg/m^3	1/1/2010	12/31/2014	l
A-Pad	Private - PSD	SO_2	24-Hour	8.12	µg/m^3	1/1/2010	12/31/2014	l
A-Pad	Private - PSD	SO_2	Annual	1.8	µg/m^3	1/1/2010	12/31/2014	l
A-Pad	Private - PSD	NO_2	1-Hour	471.4	µg/m^3	1/1/2010	12/31/2014	i, l
A-Pad	Private - PSD	NO_2	Annual	6.2	µg/m^3	1/1/2010	12/31/2014	l
A-Pad	Private - PSD	O_3	8-Hour	0.056	ppmv	1/1/2010	12/31/2014	l
Nuiqsut	Private - under review	SO_2	1-Hour	7.07	µg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	SO_2	3-Hour	6.81	µg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	SO_2	24-Hour	4.72	µg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - PSD	SO_2	Annual	0.3	µg/m^3	1/1/2013	12/31/2013	
Nuiqsut	Private - under review	CO	1-Hour	1.15	mg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	CO	8-Hour	1.15	mg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	NO_2	1-Hour	84.30	µg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	NO_2	Annual	3.76	µg/m^3	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	O_3	8-Hour	0.054	ppm	1/1/2014	12/31/2014	
Nuiqsut	Private - under review	PM_{10}	24-Hour	70	µg/m^3	1/1/2014	12/31/2014	

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
Nuiqsut	Private - PSD	$PM_{2.5}$	24-Hour	11.3	$\mu g/m^3$	1/1/2013	12/31/2013	
Nuiqsut	Private - under review	$PM_{2.5}$	Annual	2.1	$\mu g/m^3$	1/1/2014	12/31/2014	
Point Thomson	Private - PSD	SO_2	1-Hour	75.9	$\mu g/m^3$	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	SO_2	3-Hour	65.5	$\mu g/m^3$	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	SO_2	24-Hour	23.5	$\mu g/m^3$	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	SO_2	Annual	2.6	$\mu g/m^3$	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	CO	1-Hour	0.0022	mg/m^3	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	CO	8-Hour	0.0013	mg/m^3	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	NO_2	1-Hour	188	$\mu g/m^3$	3/1/2010	2/28/2011	i
Point Thomson	Private - PSD	NO_2	Annual	7.5	$\mu g/m^3$	3/1/2010	2/28/2011	
Point Thomson	Private - PSD	O_3	8-Hour	0.047	ppmv	3/1/2010	2/28/2011	
Point Thomson	Private - Not PSD	PM_{10}	24-Hour	66.5	$\mu g/m^3$	9/1/2009	8/31/2010	
Point Thomson	Private - PSD	$PM_{2.5}$	24-Hour	22	$\mu g/m^3$	12/1/2009	11/30/2010	
Point Thomson	Private - PSD	$PM_{2.5}$	Annual	2.6	$\mu g/m^3$	12/1/2009	11/30/2010	
Badami	Private - PSD	NO_2	1-Hour	73.38	$\mu g/m^3$	12/1/2009	12/31/2010	
Badami	Private - PSD	$PM_{2.5}$	24-Hour	12	$\mu g/m^3$	12/1/2009	12/31/2010	
Umiat	Private - PSD	SO_2	1-Hour	6.29	$\mu g/m^3$	7/1/2013	6/30/2014	l
Umiat	Private - PSD	SO_2	3-Hour	5.50	$\mu g/m^3$	7/1/2013	6/30/2014	l
Umiat	Private - PSD	SO_2	24-Hour	5.4	$\mu g/m^3$	7/1/2013	6/30/2014	l
Umiat	Private - PSD	SO_2	Annual	0.5	$\mu g/m^3$	7/1/2013	6/30/2014	l
Umiat	Private - PSD	CO	1-Hour	0.573	mg/m^3	7/1/2013	6/30/2014	l
Umiat	Private - PSD	CO	8-Hour	0.458	mg/m^3	7/1/2013	6/30/2014	l
Umiat	Private - PSD	NO_2	1-Hour	87.12	$\mu g/m^3$	7/1/2013	6/30/2014	l

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
Umiat	Private - PSD	NO_2	Annual	2.5	µg/m^3	7/1/2013	6/30/2014	l
Umiat	Private - PSD	O_3	8-Hour	0.051	ppm	7/1/2013	6/30/2014	l
Umiat	Private - PSD	PM_{10}	24-Hour	35.6	µg/m^3	7/1/2013	6/30/2014	l
Umiat	Private - PSD	$PM_{2.5}$	24-Hour	9	µg/m^3	7/1/2013	6/30/2014	l
Umiat	Private - PSD	$PM_{2.5}$	Annual	2.3	µg/m^3	7/1/2013	6/30/2014	l
INTERIOR ALASKA AND THE ALASKA RANGE								
Gates of the Arctic IMPROVE	IMPROVE	PM_{10}	24-Hour	38.3	µg/m^3	1/11/2011	12/31/2013	b, c, l
Gates of the Arctic IMPROVE	IMPROVE	$PM_{2.5}$	24-Hour	35.1	µg/m^3	1/11/2011	12/31/2013	c, d, l
Gates of the Arctic IMPROVE	IMPROVE	$PM_{2.5}$	Annual	2.8	µg/m^3	1/11/2011	12/31/2013	c, l
Livengood	Private - PSD	$PM_{2.5}$	24-Hour	21.8	µg/m^3	1/9/2011	1/8/2012	l
Livengood	Private - PSD	$PM_{2.5}$	Annual	2.4	µg/m^3	1/9/2011	1/8/2012	l
Fairbanks NCore	NCore	SO_2	1-Hour	146.5	µg/m^3	1/1/2012	12/31/2014	
Fairbanks NCore	NCore	SO_2	3-Hour	131	µg/m^3	1/1/2012	12/31/2012	
Fairbanks NCore	NCore	SO_2	24-Hour	85.9	µg/m^3	1/1/2012	12/31/2012	
Fairbanks NCore	NCore	SO_2	Annual	33.2	µg/m^3	1/1/2014	12/31/2014	
Fairbanks NCore	NCore	CO	1-Hour	5.41	mg/m^3	1/1/2012	12/31/2012	
Fairbanks NCore	NCore	CO	8-Hour	3.21	mg/m^3	1/1/2013	12/31/2013	
Fairbanks NCore	NCore	O_3	8-Hour	0.056	ppmv	1/1/2014	12/31/2014	
Fairbanks NCore	NCore	PM_{10}	24-Hour	111	µg/m^3	1/1/2013	12/31/2013	b, c
Fairbanks NCore	NCore	$PM_{2.5}$	24-Hour	79.3	µg/m^3	1/1/2013	12/31/2013	c, d
Fairbanks NCore	NCore	$PM_{2.5}$	Annual	11.7	µg/m^3	1/1/2013	12/31/2013	c

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
Fairbanks State Office Building	SLAMS	$PM_{2.5}$	24-Hour	83.2	µg/m^3	1/1/2010	12/31/2010	c, d
Fairbanks State Office Building	SLAMS	$PM_{2.5}$	Annual	13.2	µg/m^3	1/1/2010	12/31/2010	c, e
Denali NPS	CASTNET	O_3	8-Hour	0.064	ppmv	1/1/2014	12/31/2014	
Denali NPS	IMPROVE	PM_{10}	24-Hour	18.8	µg/m^3	1/1/2012	12/31/2014	b, c, l
Denali NPS	IMPROVE	$PM_{2.5}$	24-Hour	14.1	µg/m^3	1/1/2012	12/31/2014	c, l
Denali NPS	IMPROVE	$PM_{2.5}$	Annual	1.45	µg/m^3	1/1/2012	12/31/2014	c, l
Trapper Creek IMPROVE	IMPROVE	PM_{10}	24-Hour	33.4	µg/m^3	1/1/2012	12/31/2014	b, c, l
Trapper Creek IMPROVE	IMPROVE	$PM_{2.5}$	24-Hour	11.2	µg/m^3	1/1/2012	12/31/2014	c, l
Trapper Creek IMPROVE	IMPROVE	$PM_{2.5}$	Annual	1.7	µg/m^3	1/1/2012	12/31/2014	c, l
Donlin Creek	Private - PSD	SO_2	3-Hour	5.33	µg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	SO_2	24-Hour	5.33	µg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	SO_2	Annual	<1.333	µg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	CO	1-Hour	0.7	mg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	CO	8-Hour	0.3	mg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	NO_2	1-Hour	26.32	µg/m^3	12/1/2010, 4/17/2012	11/30/2011, 4/16/2013	l, m
Donlin Creek	Private - PSD	NO_2	Annual	1.91	µg/m^3	12/1/2010, 4/17/2012	11/30/2011, 4/16/2013	l, m
Donlin Creek	Private - PSD	O_3	8-Hour	0.054	ppmv	12/1/2010, 4/17/2012	11/30/2011, 4/16/2013	m
Donlin Creek	Private - PSD	PM_{10}	24-Hour	15	µg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	$PM_{2.5}$	24-Hour	12	µg/m^3	1/1/2008	12/31/2008	
Donlin Creek	Private - PSD	$PM_{2.5}$	Annual	2.3	µg/m^3	1/1/2008	12/31/2008	

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
SOUTHCENTRAL ALASKA AND COOK INLET								
Palmer	SPM	PM_{10}	24-Hour	376	$\mu g/m^3$	1/1/2014	12/31/2014	b, c, h
Palmer	SPM	$PM_{2.5}$	24-Hour	29.1	$\mu g/m^3$	1/1/2014	12/31/2014	c, h
Palmer	SPM	$PM_{2.5}$	Annual	4.25	$\mu g/m^3$	1/1/2012	12/31/2012	c, h
Wasilla	SPM	O_3	8-Hour	0.054	ppmv	1/1/2014	12/31/2014	h, k
Wasilla	SPM	PM_{10}	24-Hour	127	$\mu g/m^3$	1/1/2014	12/31/2014	b, c, h
Wasilla	SPM	$PM_{2.5}$	24-Hour	45.9	$\mu g/m^3$	1/1/2012	12/31/2012	c, d, h
Wasilla	SPM	$PM_{2.5}$	Annual	6.50	$\mu g/m^3$	1/1/2011	12/31/2011	c, h
Butte	SPM	PM_{10}	24-Hour	117	$\mu g/m^3$	1/1/2014	12/31/2014	b, c, h
Butte	SPM	$PM_{2.5}$	24-Hour	56.4	$\mu g/m^3$	1/1/2014	12/31/2014	c, d, h
Butte	SPM	$PM_{2.5}$	Annual	7.94	$\mu g/m^3$	1/1/2014	12/31/2014	c, h
Eagle River - Parkgate	SLAMS	CO	1-Hour	8.13	mg/m^3	1/1/2012	12/31/2012	j
Eagle River - Parkgate	SLAMS	CO	8-Hour	3.09	mg/m^3	1/1/2012	12/31/2012	j
Eagle River - Parkgate	SLAMS	O_3	8-Hour	0.05	ppmv	1/1/2010	12/31/2010	
Eagle River - Parkgate	SLAMS	PM_{10}	24-Hour	207	$\mu g/m^3$	1/1/2010	12/31/2010	b, c, f
Eagle River - Parkgate	SLAMS	$PM_{2.5}$	24-Hour	41.5	$\mu g/m^3$	1/1/2014	12/31/2014	c, d
Eagle River - Parkgate	SLAMS	$PM_{2.5}$	Annual	5.46	$\mu g/m^3$	1/1/2012	12/31/2012	c
DHSS	SPM	CO	1-Hour	7.45	mg/m^3	1/1/2012	12/31/2012	h, j
DHSS	SPM	CO	8-Hour	3.44	mg/m^3	1/1/2012	12/31/2012	h, j
DHSS	SPM	PM_{10}	24-Hour	179	$\mu g/m^3$	1/1/2010	12/31/2010	g, h
DHSS	SPM	$PM_{2.5}$	24-Hour	24.9	$\mu g/m^3$	1/1/2012	12/31/2012	c, h
DHSS	SPM	$PM_{2.5}$	Annual	4.90	$\mu g/m^3$	1/1/2012	12/31/2012	c, h
Garden Site	SLAMS/CSN	CO	1-Hour	7.96	mg/m^3	1/1/2012	12/31/2014	j, l

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
Garden Site	SLAMS/CSN	CO	8-Hour	5.04	mg/m^3	1/1/2012	12/31/2014	j, l
Garden Site	SLAMS/CSN	O_3	8-Hour	0.05	ppmv	1/1/2011	12/31/2011	
Garden Site	SLAMS/CSN	PM_{10}	24-Hour	113	$\mu g/m^3$	1/1/2010	12/31/2010	b, c
Garden Site	SLAMS/CSN	$PM_{2.5}$	24-Hour	57.7	$\mu g/m^3$	1/1/2014	12/31/2014	c, d
Garden Site	SLAMS/CSN	$PM_{2.5}$	Annual	6.73	$\mu g/m^3$	1/1/2012	12/31/2012	c
Turnagain	SLAMS	CO	1-Hour	9.39	mg/m^3	1/1/2010	12/31/2010	j
Turnagain	SLAMS	CO	8-Hour	7.90	mg/m^3	1/1/2010	12/31/2010	j
Tudor Road	SPM	PM_{10}	24-Hour	256	$\mu g/m^3$	1/1/2013	12/31/2013	b, c, h
International Station Power Plant (ISPP)	Private - PSD	NO_2	1-Hour	222.60	$\mu g/m^3$	9/1/2011	8/31/2012	i
ISPP	Private - PSD	NO_2	Annual	28.22	$\mu g/m^3$	9/1/2011	8/31/2012	
ISPP	Private - PSD	O_3	8-Hour	0.048	ppmv	9/1/2011	8/31/2012	
Agrium	Private - PSD	O_3	8-Hour	0.0609	ppmv	4/1/2014	10/31/2014	
Agrium	Private - PSD	PM_{10}	24-Hour	113.7	$\mu g/m^3$	10/1/2013	9/30/2014	
Agrium	Private - PSD	$PM_{2.5}$	24-Hour	70.7	$\mu g/m^3$	10/1/2013	9/30/2014	a, d
Agrium	Private - PSD	$PM_{2.5}$	Annual	3.6	$\mu g/m^3$	10/1/2013	9/30/2014	
Kenai Peninsula Borough Bldg	SLAMS	PM_{10}	24-Hour	131	$\mu g/m^3$	1/1/2012	12/31/2012	b, c
Kenai Peninsula Borough Bldg	SLAMS	$PM_{2.5}$	24-Hour	8.7	$\mu g/m^3$	1/1/2012	12/31/2012	c
Kenai Peninsula Borough Bldg	SLAMS	$PM_{2.5}$	Annual	0.939	$\mu g/m^3$	1/1/2012	12/31/2012	c
Swanson River	Private - PSD	CO	1-Hour	2.5	mg/m^3	5/1/2008	4/30/2009	
Swanson River	Private - PSD	CO	8-Hour	1.1	mg/m^3	5/1/2008	4/30/2009	
Swanson River	Private - PSD	NO_2	Annual	13.2	$\mu g/m^3$	5/1/2008	4/30/2009	

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration		Date Range		Footnotes
						Start	End	
Tuxedni IMPROVE	IMPROVE	PM_{10}	24-Hour	35.2	µg/m^3	1/1/2014	12/31/2014	b, c
Tuxedni IMPROVE	IMPROVE	$PM_{2.5}$	24-Hour	14.5	µg/m^3	1/1/2014	12/31/2014	c
Tuxedni IMPROVE	IMPROVE	$PM_{2.5}$	Annual	1.91	µg/m^3	1/1/2014	12/31/2014	c
Nikiski LNG	Private - PSD	SO_2	1-Hour	8.12	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	SO_2	3-Hour	4.98	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	SO_2	24-Hour	2.36	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	SO_2	Annual	0.00	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	CO	1-Hour	1.145	mg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	CO	8-Hour	1.145	mg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	NO_2	1-Hour	35.7	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	NO_2	Annual	2.63	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	O_3	8-Hour	0.050	ppmv	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	PM_{10}	24-Hour	39.5	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	$PM_{2.5}$	24-Hour	23.6	µg/m^3	1/1/2015	12/31/2015	l
Nikiski LNG	Private - PSD	$PM_{2.5}$	Annual	3.7	µg/m^3	1/1/2015	12/31/2015	l

Sources: ADEC 2015b; ADEC 2015c; ADEC 2015d; ADEC 2015e; ADEC 2015f; ADEC 2015g; ADEC 2014a; ADEC 2014b; AES 2016a; AES 2016b; AES 2016c; AMEC 2012; Enviroplan 2014; Enviroplan 2013a; Enviroplan 2013b; Enviroplan 2012; Enviroplan 2011a; Enviroplan 2011b; Enviroplan 2009a; Enviroplan 2009b; ERG 2014a; ERG 2014b; ERG 2014c; EPA 2015b; EPA 2011b; MACTEC 2011; MACTEC 2009a; MACTEC 2009b; MOA 2013; SLR 2015a; SLR 2015b; SLR 2015c; SLR 2015d; SLR 2011a; SLR 2011b.

TABLE 1
Existing Ambient Air Quality Data in the Project Vicinity

Monitoring Station	Monitor Type	Pollutant	Averaging Period	Monitored Maximum Concentration	Date Range		Footnotes
					Start	End	

[a] The final findings report attributes this value to emissions from the Funny River wild land fire (ADEC 2014b).

[b] For agency-operated monitors, PM_{10} values adjusted to standard temperature and pressure (STP) are presented when available.

[c] When available, data collected by continuous monitors are presented instead of data collected by filter monitors.

[d] This one-year value is not a violation of the 24-hour $PM_{2.5}$ NAAQS and AAAQS because those standards are attained when the three-year average of the annual 98th percentile 24-hour concentration is less than or equal to 35 µg/m^3.

[e] This one-year value is not a violation of the annual $PM_{2.5}$ NAAQS or the annual $PM_{2.5}$ AAAQS because those standards are attained when the three-year average of the annual arithmetic mean concentration is less than or equal to the respective standard.

[f] An exceptional event waiver request has been submitted to EPA addressing this value. The second highest 24-hour value for 2010 was 92 µg/m^3.

[g] An exceptional event waiver request has been submitted to EPA addressing this value. The second highest 24-hour value for 2010 was 89 µg/m^3.

[h] The SPM data are not are not to be used for NAAQS compliance demonstrations (EPA 2009).

[i] This one-year value is not a violation of the 1-hour NO_2 NAAQS and AAAQS because those standards are attained when the three-year average of the annual, 98th percentile, daily maximum 1-hour NO_2 concentration is less than or equal to the standard.

[j] This CO monitor was operated seasonally. Data for a given calendar year were collected from January through March and October through December.

[k] This value has an observation percentage (data capture rate) of 75 percent. Wasilla is the only Matanuska-Susitna Valley monitor at which ozone data was collected, so this value is presented even though the annual observation percentage is less than 80 percent.

[l] Data from this monitor are used as representative background data. See Table 2.

[m] Data were collected during two discrete one-year monitoring periods.

Table 2
Representative Background Ambient Air Quality Data

Monitoring Station	Monitor Type	Pollutant	Air Quality Concentrations				Date Range		Footnotes
			Standard		Background Form	Monitored Background Concentration	Start	End	
Alaska North Slope									
CCP	Private - PSD	CO	40	mg/m^3	Maximum 1 Hour Average	1.15	1/1/2014	12/31/2014	
CCP	Private - PSD	CO	10	mg/m^3	Maximum 8 Hour Average	1.15	1/1/2014	12/31/2014	

Table 2
Representative Background Ambient Air Quality Data

Monitoring Station	Monitor Type	Pollutant	Air Quality Concentrations				Date Range		Footnotes
			Standard		Background Form	Monitored Background Concentration	Start	End	
CCP	Private - PSD	PM_{10}	150	µg/m^3	Maximum 24 Hour Average	50.0	1/1/2014	12/31/2014	
CCP	Private - PSD	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	15	1/1/2014	12/31/2014	
CCP	Private - PSD	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	3.7	1/1/2014	12/31/2014	
A-Pad	Private - PSD	SO_2	196	µg/m^3	Daily Maximum 1 Hour Average (99th Percentile)	9.39	1/1/2010	12/31/2014	
A-Pad	Private - PSD	SO_2	1,300	µg/m^3	Maximum 3 Hour Average	20.96	1/1/2010	12/31/2014	
A-Pad	Private - PSD	SO_2	365	µg/m^3	Maximum 24 Hour Average	8.12	1/1/2010	12/31/2014	
A-Pad	Private - PSD	SO_2	80	µg/m^3	Annual Average	1.8	1/1/2010	12/31/2014	
A-Pad	Private - PSD	NO_2	188	µg/m^3	Daily Maximum 1 Hour Average (98th Percentile)	61.69	1/1/2009	12/31/2013	
A-Pad	Private - PSD	NO_2	100	µg/m^3	Annual Average	6.0	1/1/2009	12/31/2013	
A-Pad	Private - PSD	O_3	0.070	ppmv	4th Highest Daily Maximum 8 Hour Average	0.056	1/1/2010	12/31/2014	
Umiat	Private - PSD	SO_2	196	µg/m^3	Daily Maximum 1 Hour Average (99th Percentile)	5.2	7/1/2013	6/30/2014	
Umiat	Private - PSD	SO_2	1,300	µg/m^3	Maximum 3 Hour Average	5.5	7/1/2013	6/30/2014	
Umiat	Private - PSD	SO_2	365	µg/m^3	Maximum 24 Hour Average	5.4	7/1/2013	6/30/2014	
Umiat	Private - PSD	SO_2	80	µg/m^3	Annual Average	0.5	7/1/2013	6/30/2014	
Umiat	Private - PSD	CO	40	mg/m^3	Maximum 1 Hour Average	0.573	7/1/2013	6/30/2014	
Umiat	Private - PSD	CO	10	mg/m^3	Maximum 8 Hour Average	0.458	7/1/2013	6/30/2014	

Table 2
Representative Background Ambient Air Quality Data

Monitoring Station	Monitor Type	Pollutant	Air Quality Concentrations				Date Range		Footnotes
			Standard		Background Form	Monitored Background Concentration	Start	End	
Umiat	Private - PSD	NO_2	188	µg/m^3	Daily Maximum 1 Hour Average (98th Percentile)	61.2	7/1/2013	6/30/2014	
Umiat	Private - PSD	NO_2	100	µg/m^3	Annual Average	2.5	7/1/2013	6/30/2014	
Umiat	Private - PSD	O_3	0.070	ppmv	4th Highest Daily Maximum 8 Hour Average	0.050	7/1/2013	6/30/2014	
Umiat	Private - PSD	PM_{10}	150	µg/m^3	Maximum 24 Hour Average	35.6	7/1/2013	6/30/2014	
Umiat	Private - PSD	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	7.1	7/1/2013	6/30/2014	
Umiat	Private - PSD	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	2.3	7/1/2013	6/30/2014	
Interior Alaska and the Alaska Range									
Gates of the Arctic IMPROVE	IMPROVE	PM_{10}	150	µg/m^3	Maximum 24 Hour Average	38.3	1/11/2011	12/31/2013	
Gates of the Arctic IMPROVE	IMPROVE	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	11.8	1/11/2011	12/31/2013	
Gates of the Arctic IMPROVE	IMPROVE	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	2.8	1/11/2011	12/31/2013	
Livengood	Private - PSD	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	10.2	1/9/2011	1/8/2012	
Livengood	Private - PSD	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	2.4	1/9/2011	1/8/2012	
Denali NPS	IMPROVE	PM_{10}	150	µg/m^3	Maximum 24 Hour Average	18.8	1/1/2012	12/31/2014	

Table 2
Representative Background Ambient Air Quality Data

Monitoring Station	Monitor Type	Pollutant	Air Quality Concentrations				Date Range		Footnotes
			Standard		Background Form	Monitored Background Concentration	Start	End	
Denali NPS	IMPROVE	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	6.7	1/1/2012	12/31/2014	
Denali NPS	IMPROVE	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	1.5	1/1/2012	12/31/2014	
Trapper Creek IMPROVE	IMPROVE	PM_{10}	150	µg/m^3	Maximum 24 Hour Average	33.4	1/1/2012	12/31/2014	
Trapper Creek IMPROVE	IMPROVE	$PM_{2.5}$	35	µg/m^3	24 Hour Average (98th Percentile)	5.6	1/1/2012	12/31/2014	
Trapper Creek IMPROVE	IMPROVE	$PM_{2.5}$	12	µg/m^3	Annual Average (Average of Quarterly Mean)	1.7	1/1/2012	12/31/2014	
Donlin Creek	Private - PSD	NO_2	188	µg/m^3	Daily Maximum 1 Hour Average (98th Percentile)	15.5	12/1/2010 4/17/2012	11/30/2011 4/16/2013	a
Donlin Creek	Private - PSD	NO_2	100	µg/m^3	Annual Average	1.9	12/1/2010, 4/17/2012	11/30/2011, 4/16/2013	b
Garden Site	SLAMS/CSN	CO	40	mg/m^3	Maximum 1 Hour Average	7.96	1/1/2012	12/31/2014	
Garden Site	SLAMS/CSN	CO	10	mg/m^3	Maximum 8 Hour Average	5.04	1/1/2012	12/31/2014	
Southcentral Alaska and Cook Inlet									
Nikiski LNG	Private - PSD	SO_2	196	µg/m^3	Daily Maximum 1 Hour Average (99th Percentile)	5.0	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	SO_2	1,300	µg/m^3	Maximum 3 Hour Average	5.0	1/1/2015	12/31/2015	

Table 2
Representative Background Ambient Air Quality Data

Monitoring Station	Monitor Type	Pollutant	Air Quality Concentrations				Date Range		Footnotes
			Standard		Background Form	Monitored Background Concentration	Start	End	
Nikiski LNG	Private - PSD	SO_2	365	$\mu g/m^3$	Maximum 24 Hour Average	2.4	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	SO_2	80	$\mu g/m^3$	Annual Average	0.0	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	CO	40	mg/m^3	Maximum 1 Hour Average	1.145	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	CO	10	mg/m^3	Maximum 8 Hour Average	1.145	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	NO_2	188	$\mu g/m^3$	Daily Maximum 1 Hour Average (98^{th} Percentile)	32.3	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	NO_2	100	$\mu g/m^3$	Annual Average	2.6	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	O_3	0.070	ppmv	4^{th} Highest Daily Maximum 8 Hour Average	0.047	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	PM_{10}	150	$\mu g/m^3$	Maximum 24 Hour Average	40	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	$PM_{2.5}$	35	$\mu g/m^3$	24 Hour Average (98^{th} Percentile)	12	1/1/2015	12/31/2015	
Nikiski LNG	Private - PSD	$PM_{2.5}$	12	$\mu g/m^3$	Annual Average (Average of Quarterly Mean)	3.7	1/1/2015	12/31/2015	

[a] The background 1-hour NO_2 value is represented by the two-year average of the 98^{th} –percentile of the annual distribution of daily maximum 1-hour NOx concentrations.
[b] The background annual NO_2 value is represented by the maximum annual average NO_2 concentration collected during two discrete one-year monitoring periods.

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ALASKA STAND ALONE PIPELINE/*ASAP* PROJECT

Dispersion Modeling Protocol

008-C-22-RTA-D-0005

May 13, 2015

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NOTICE

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION FOR THE PURPOSE OF PRELIMINARY PROJECT PLANNING.

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REVISION HISTORY

Revision	Date	Comment	Approval	
			Company Preparing Report	AGDC
2	4/1/2015	Update in response to ADEC comments	Golder Associates Inc.	Alyssa Looney
3	5/13/2015	Content changes per ADEC 4/17/2015 comments	Golder Associates Inc.	Alyssa Looney

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ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
°F	degrees Fahrenheit
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AERMIC	American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee
AERMOD	Atmospheric dispersion modeling system
AGDC	Alaska Gasline Development Corporation
ANWR	Arctic National Wildlife Refuge
BPIP-PRIME	EPA Building Profile Input Program for use with the plume-rise model-enhancement algorithm
CCP	Central Compression Plant
CGF	Central Gas Facility
CFR	*Code of Federal Regulations*
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EPA	U.S. Environmental Protection Agency
FLM	Federal Land Manager
GCF	Gas Conditioning Facility
GHG	Greenhouse Gas
HP/LP	High Pressure/Low Pressure
km	kilometer
MW	megawatt

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NAAQS	National Ambient Air Quality Standards
NAD 83	North American Datum 1983
NO_x	Nitrogen Oxides
NO_2	Nitrogen Dioxide
O_3	ozone
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
ppm	parts per million
ppb	parts per billion
PSD	Prevention of Significant Deterioration
PTE	potential to emit
PVMRM	plume volume molar ratio method
Q/D	emissions/distance
SIL	significant impact level
SMC	Significant Monitoring Concentration
SO_2	Sulfur Dioxide
SU/SD	Start-up/Shut-down
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds

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Appendix

A Diurnal Background NO_2 Concentrations

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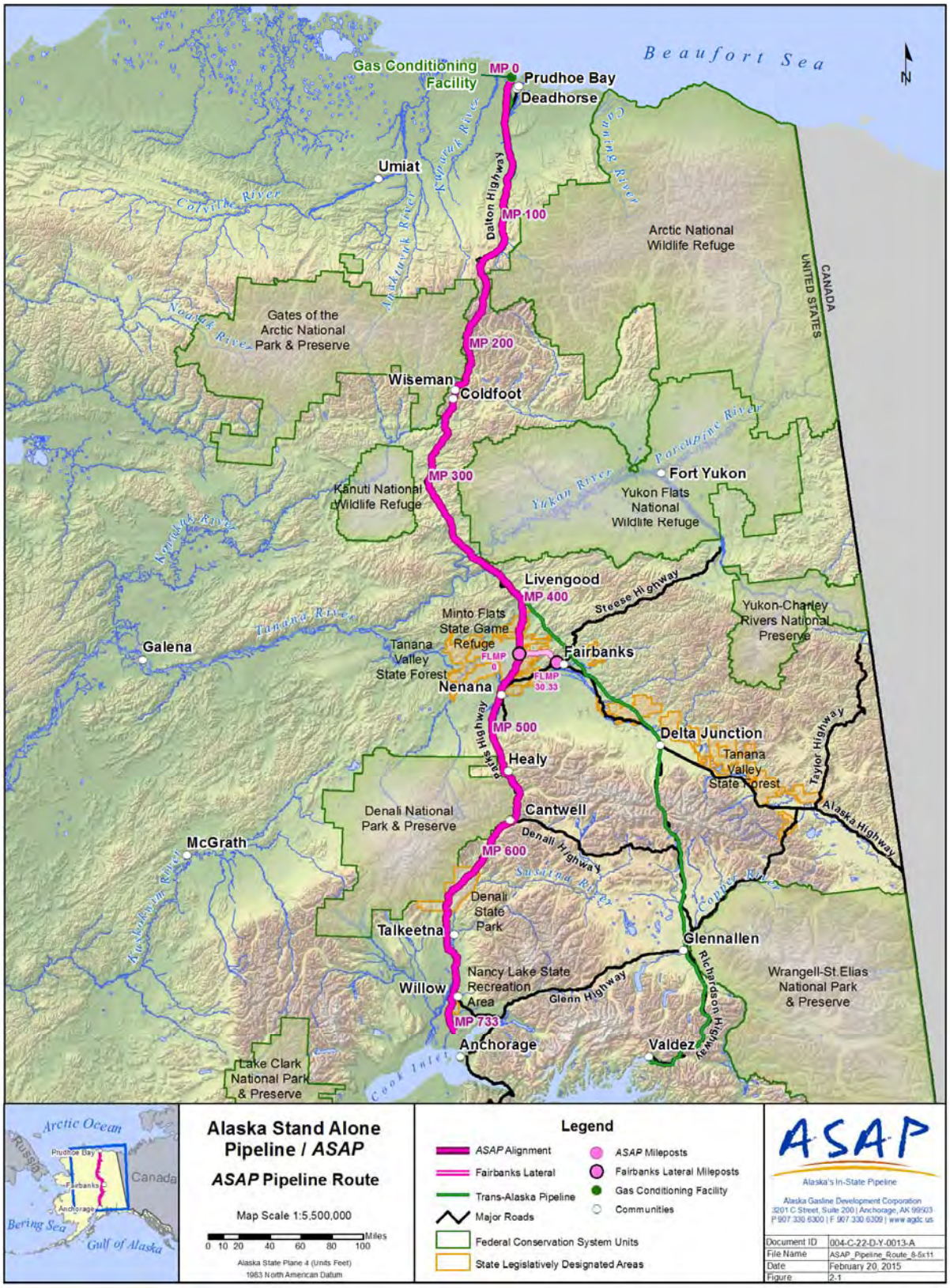
1. PROJECT DESCRIPTION

The Alaska Stand Alone Pipeline (ASAP) Project comprises a Gas Conditioning Facility (GCF) near Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet per day (MMscfd) of natural gas; a buried, 36-inch, 733-mile-long, 1,480-pound per square inch gauge (psig) buried natural gas pipeline connecting the GCF to the existing ENSTAR Natural Gas Company (ENSTAR) pipeline system in the Matanuska-Susitna Borough (MSB); a buried, 12-inch, 30-mile-long, 1,480-psig, lateral line connecting the mainline to Fairbanks; and associated facilities. The pipeline system will be designed to transport natural gas having a composition that will make it accessible to and useable by communities, government entities, and natural resource development projects.

The proposed pipeline will typically be buried with a minimum cover of 30 inches and a bottom-of-ditch depth of 6 feet, except at fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. The ASAP route will generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the route will continue south, to the west of Fairbanks and Nenana. The pipeline will bypass Denali National Park and Preserve (DNP&P) to the east and will then generally parallel the Parks Highway corridor to Willow, continuing south to its connection with ENSTAR's distribution system at Mile Post (MP) 39 of the Beluga Pipeline southwest of Big Lake. The Fairbanks Lateral tie-in will be located approximately 2.5 miles south of the Chatanika River at MP 440 of the mainline. From the tie-in, the Fairbanks Lateral pipeline will traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extending southeast into Fairbanks (Figure 1).

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Figure 1. Vicinity Map



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AGDC anticipates submitting an application for a Prevention of Significant Deterioration (PSD) in the near future, although a tentative timeline is not available yet.. Once a PSD permit is received, AGDC will commence construction within 18 months. The GCF will be built off-shore and sea lifted to Prudhoe Bay in modules for final assembly at the site. Therefore, it is likely the activity that commences construction will be a financial obligation before an on-site activity takes place.

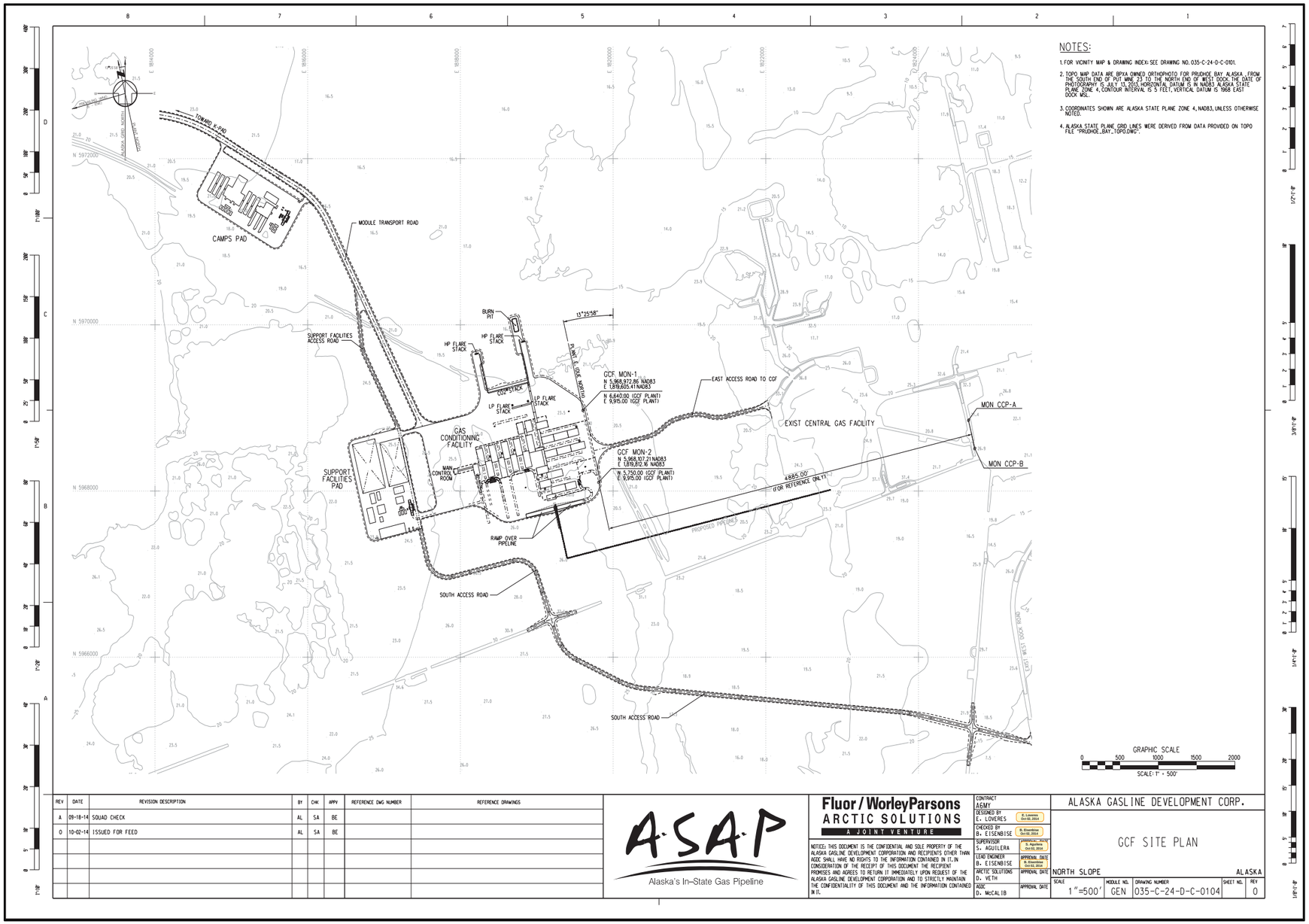
The proposed GCF location is designated as attainment or unclassified for all criteria air pollutants (EPA, 2013b) and is in the Northern Alaska Intrastate Air Quality Control Region. The nearest federally-designated Class I area (Denali National Park) is located more than 300-kilometers (km) from the proposed Facility. Therefore, the project is considered to have a negligible impact on Class I areas and would not be required to submit an analysis of air quality impacts at the Class I areas.

This document summarizes the modeling methodology to evaluate the Facility's impacts on air quality with respect to the National Ambient Air Quality Standards (NAAQS) and PSD Increment Standards for Class II areas. The methodology has been prepared based on the U.S. Environmental Protection Agency's (EPA's) *Guidelines on Air Quality Models* (2005), Alaska Department of Environmental Conservation (ADEC) Modeling Review Procedures (ADEC, 2013a), and the Alaska Air Quality Control Rules (ADEC, 2013b). The document is formatted to conform to the ADEC Air Quality Modeling Protocol Outline for PSD Permit Applications (ADEC, 2014).The proposed location for the GCF is presented in Figure 2 .

Figure 2 presents the location of GCF with respect to nearby existing facilities.

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Figure 2. Site Location Map



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1.1 PROJECT CLASSIFICATION

The proposed GCF potential emissions are expected to exceed the PSD 250 tons per year (tpy) threshold for oxides of nitrogen and carbon monoxide. Subsequently, the project would also exceed the significant emission thresholds for the following pollutants as described below:

- particulate matter less than 10 microns in aerodynamic diameter (PM_{10}) at greater than 25 tpy
- particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) at greater than 10 tpy
- volatile organic compounds (VOC) as an ozone precursor at greater than 40 tpy
- greenhouse gases (GHG) at greater than 100,000 tpy

Estimated emissions of sulfur dioxide and sulfuric acid mist are below their significant emission thresholds of 40 tpy and 7 tpy, respectively. Therefore, the GCF intends to apply for a PSD construction permit which would be issued by ADEC.

1.2 POLLUTANTS AND AVERAGING TIMES

PSD permitting requires an ambient assessment for pollutants above the significant emission thresholds. Therefore, dispersion modeling will be conducted for the following pollutants: NO_2, PM_{10}, $PM_{2.5}$ and CO. Although VOC and GHG emissions exceed PSD emission thresholds and are included in the following discussion, modeling of VOC or GHG emissions would not be conducted as there are no ambient air quality standards for these pollutants. Table 1 presents the averaging periods to be modeled.

Table 1. Averaging Periods to be Modeled

AVERAGING PERIOD	NO_2	PM_{10}	$PM_{2.5}$	CO
1-hour	X			X
8-hour				X
24-hour		X	X	
Annual	X	X	X	

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2. STATIONARY SOURCE DESCRIPTION

The ASAP project will have a design capacity to ship up to 500 million standard cubic feet (MMscf) of gas per day at a maximum operating pressure of 1,480 pounds per square inch (psi). With the redundant systems described below, the GCF will have a design capacity to process up to 1,000 MMscf of feed gas per day.

Feed gas will be received from the Central Gas Facility/Central Compressor Plant (CGF/CCP) located approximately 1 km east of the proposed GCF. The location of CGF/CCP is provided in Figure 2. Excess amounts of CO_2, H_2S and water will be removed from the feed gas using a Fluor proprietary technology. The CO_2 will be compressed before returning it to the CGF/CCP. The cleaned/treated gas will be compressed to the maximum operating pressure. For both activities, simple cycle turbines will be used to direct drive the compressors. The feed gas compressors will have approximately 44 megawatts (MW) available power while the CO_2 compressors will have approximately 24 MW available power. Treated natural gas will be used for the turbine fuel.

Waste hydrocarbon liquids from the process will normally be returned to the CGF/CCP. Flares will be used to burn the hydrocarbon liquids in case of emergency. In the unlikely event that this occurs, the available capacity of the flares will be sufficiently large to accept the process liquids: the high pressure flare capacities will be 35,625 British thermal unit per hour (MMBtu/hr) each while the low pressure flare capacities will be 990 MMBtu/hr each. Pilot gas consisting of treated natural gas will be burned at all times in order to maintain appropriate pressure in the flare lines. Should the flares not have sufficient capacity to burn hydrocarbon liquids, a burn pit will be available. This burn pit will have no normal operating emissions.

Fugitive emissions of hydrocarbons and hydrogen sulfide from piping and connectors will be kept at a minimum through a combination of the welding technique used for pipeline construction and leak detection equipment during operations.

Building heaters of approximately 130 million British thermal unit per hour (MMBtu/hr) individual capacity will be used to maintain a temperature of no less than 40 degrees Fahrenheit (F) at all times in the module buildings. Temperatures below 40 degrees F could damage GCF equipment.

Simple cycle turbines with approximately 90 MW available power will be used to provide power to the facility. In case of power failure, four 2.5 MW diesel-fired emergency generators located at the GCF pad, three 1.0 MW diesel-fired emergency generators located at the support facilities pad and three 1.350 MW diesel-fired emergency generators located at the camp pad will provide emergency power. For fire emergencies, four 0.4 MW fire pump generators are proposed.

Diesel storage tanks will be located at the GCF pad, the support facilities pad and at the camp pad to provide diesel to emergency generators when needed. At the camp pad, the diesel storage tanks will also provide diesel to operate non-road and on-road equipment. A diesel dispensing facility

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will be located at the camp pad. In addition, a gasoline storage tank and dispensing facility will be located at the camp pad.

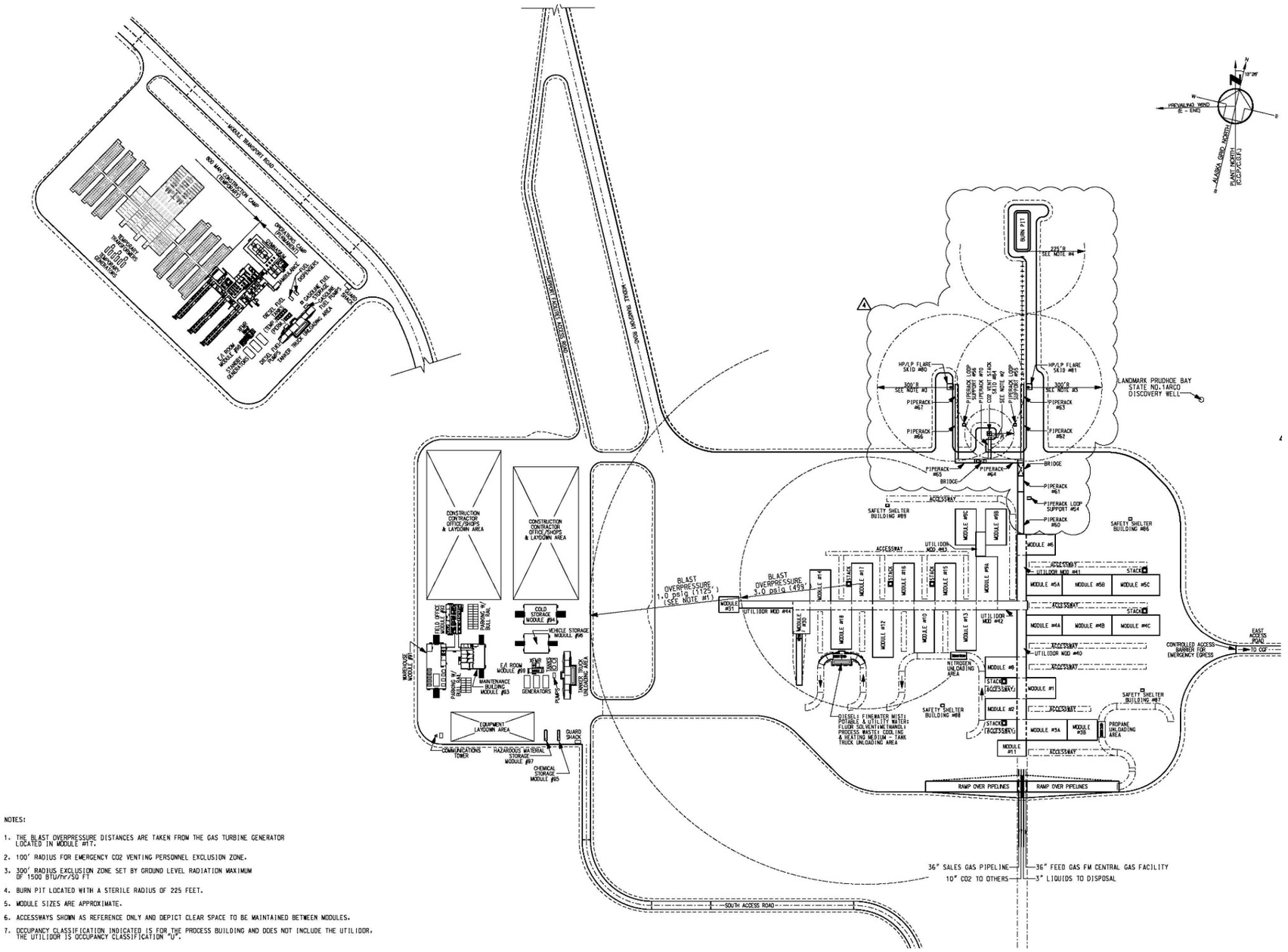
Figure 3 shows the layout of the proposed GCF facility including the building structures and the proposed emission units. There will not be a fence-line and as a result, the outer edges of the gravel pad housing the GCF facility and the support facilities will be considered as the ambient air boundary. According to 40 Code of Federal Regulations (CFR) Part 50 Section 50.1(e), "ambient air" is defined as "that portion of the atmosphere, external to buildings, to which the general public has access". The location of the GCF is remote and there are no general public within the near vicinity of the facility. Therefore the outer edges of the gravel pads will be considered as ambient boundary for the air quality analysis where fences have not been constructed.

The gravel pad housing the camp is not contiguous to GCF and is located approximately 1 km northwest of the GCF facility. A road connects the two pads. The tundra between the GCF facility and the support facilities except the connecting road will be considered as ambient air.

The potential to emit for the facility will be based on the operational limits for each piece of equipment with the exception of the emergency generators which will be limited to 500 hours per year based on ADEC and EPA guidance, and unlimited operation of only 3 of the 4 heaters at any given time. Any changes to the project that changes the classification of pollutants will be identified in the permit application and modeling report.

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Figure 3. Preliminary Site Layout


MODULE TRANSPORT ROAD
300 MAN CONSTRUCTION CAMP
OPERATIONS CAMP
SERVICE FACILITY ACCESS ROAD
CONSTRUCTION CONTRACTOR OFFICE/SHOPS & LAYDOWN AREA
CONSTRUCTION CONTRACTOR OFFICE/SHOPS & LAYDOWN AREA
BLAST OVERPRESSURE 1.0 psig (1125') (SEE NOTE #1)
BLAST OVERPRESSURE 3.0 psig (495')
BURN PIT
225'Ø SEE NOTE #4
HP/LP FLARE SKID #80
HP/LP FLARE SKID #81
300'Ø SEE NOTE #2
300'Ø SEE NOTE #3
LANDMARK PRUDHOE BAY STATE NO.1 ARCO DISCOVERY WELL
PIPERACK #67
PIPERACK #66
PIPERACK #63
PIPERACK #62
PIPERACK #65
PIPERACK #64
PIPERACK #61
PIPERACK #60
BRIDGE
ACCESSWAY
SAFETY SHELTER BUILDING #89
SAFETY SHELTER BUILDING #86
UTILIDOR MOD #43
UTILIDOR MOD #41
UTILIDOR MOD #44
UTILIDOR MOD #42
UTILIDOR MOD #40
MODULE #5A
MODULE #5B
MODULE #5C
MODULE #4A
MODULE #4B
MODULE #4C
MODULE #5
MODULE #4
MODULE #3
MODULE #2
MODULE #1
MODULE #11
STACK
EAST ACCESS ROAD
TO CGF
CONTROLLED ACCESS BARRIER FOR EMERGENCY EGRESS
NITROGEN UNLOADING AREA
SAFETY SHELTER BUILDING #88
SAFETY SHELTER BUILDING #87
PROPANE UNLOADING AREA
DIESEL/ FINEMATER MIST/ POTABLE & UTILITY WATER/ FLUOR SOLVENT/METHANOL/ PROCESS WASTE/ COOLING & HEATING MEDIUM - TANK TRUCK UNLOADING AREA
RAMP OVER PIPELINES
RAMP OVER PIPELINES
MODULE #51
MODULE #50
MODULE #9
MODULE #8
MODULE #7
MODULE #6
MODULE #12
MODULE #10
MODULE #17
MODULE #16
MODULE #15
MODULE #14
MODULE #13
MODULE #18
MODULE #19
MODULE #20
MODULE #21
MODULE #22
MODULE #23
MODULE #24
MODULE #25
MODULE #26
MODULE #27
MODULE #28
MODULE #29
MODULE #30
MODULE #31
MODULE #32
MODULE #33
MODULE #34
MODULE #35
MODULE #36
MODULE #37
MODULE

3. PRECONSTRUCTION MONITORING

Preliminary discussions with ADEC[1] have indicated that ongoing ambient air monitoring at the neighboring Central Compression Plant (CCP), owned by British Petroleum for NO_2, $PM_{2.5}$, PM_{10}, and CO (when complete) would satisfy any preconstruction monitoring requirements under 18 Alaska Administrative Code (AAC) 50.040(h)(11). Therefore, an additional background monitoring station was not established by AGDC.

The CCP is located approximately one kilometer east of the proposed GCF site. Ambient air data for NO_2, $PM_{2.5}$, and PM_{10} have been collected at the site. The CCP installed a CO monitor at the end of 2013 and hourly data for 2014 has now been submitted to ADEC for review, which is expected to be reviewed and available for use by summer 2015. If this data is not available for use when modeling is finalized for the application, the Fairbanks, Alaska monitoring station data will be used for background CO concentrations. The Fairbanks area is designated as maintenance for CO, therefore, it is expected the concentrations monitored in the Fairbanks area would be conservative compared to conditions at Prudhoe Bay.

[1] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

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4. APPROACH

4.1 MODEL SELECTION

The American Meteorological Society (AMS) and the EPA regulatory model improvement committee's (AERMIC's) most recent version of their regulatory dispersion model (AERMIC and EPA regulatory model, AERMOD, Version 14134) will be used to evaluate the ambient air quality impacts from the GCF. If a newer version of the model is available prior to beginning of the modeling analysis, the newer version will be used. It is understood that if a newer version of the model becomes available during the application review process, ADEC may ask for evaluation of certain modeling scenarios using the newer version of the model. The AERMOD model is the currently recommended EPA short-term model for predicting impacts from industrial-point sources, as well as area and volume sources.

4.2 MODEL OPTIONS

The AERMOD modeling will be conducted using regulatory default options as recommended in the EPA's *Guideline on Air Quality Models* (EPA, 2005), with the exception of the FLAT terrain option. The FLAT terrain option will be used based on the void of complex terrain in the region and based on conversations with ADEC[2]. The building profile input program with plume rise model enhancement (BPIP-Prime Version 04274), a supporting preprocessing program for AERMOD, will also be used.

The rural dispersion option will be used since land use within 3 km of the GCF is primarily classified as rural.

4.3 OPERATING SCENARIOS

The normal operations of the GCF will be modeled. This consists of the equipment firing treated gas and non-emergency situations.

The normal mode of operation would include operation of the power turbines including startup and shutdowns (SU/SD), operation of the CO_2 compressor and feed gas compressor turbines, routine testing and maintenance of the emergency equipment, and use of non-road engine support equipment. Additional details are described in Section 9.

[2] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

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Pilot gas burning by the high pressure (HP) and low pressure (LP) flares are part of normal operation. In the unlikely occurrence of an emergency, the flares would also combust gas as needed. Emergency situations at the GCF would include the following –

- Module fire – in the event of a fire within a module, the critical process systems are isolated and depressured to the flare. This action will occur as quickly as possible and are not expected to last for long periods.
- Process upset – the GCF process operates at elevated pressures and involves multiple levels of pressure throughout the process. In the event of a process upset (instrument failure, control system failure, equipment failure, misoperation) and to avoid overpressuring of the systems that are not designed for higher pressures, the relief system will operate automatically to relieve process streams to the flare. The volume and duration of this depressuring depends on the volume and pressure of the system being protected.

It is impossible to predict the frequency or duration of an emergency flaring event. The facility has been designed to avoid these events and it is hopeful emergency events would not occur at the facility.

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5. METEOROLOGY

5.1 SCREENING METEOROLOGY

Screening meteorological data will not be used for this analysis. The refined meteorological data to be used for this analysis are described below.

5.2 REFINED METEOROLOGY

The most recent 5-year meteorological data set with surface data from the Prudhoe Bay Unit A Pad and upper air data from Barrow (WBAN # 27502) for the years 2009 to 2013 will be used. This is the ADEC-recommended data set for this project. The 2009, 2010, and 2011 data sets have already been processed by ADEC specifically for use in dispersion modeling analyses and are available for download from the ADEC website. However, only the 2011 data set has been processed using the latest version of AERMET (Version 14134). As a result, the 2009 and 2010 data sets have been re-processed using the latest version of AERMET. The 2012 and 2013 Pad A surface data sets have been obtained from ADEC. The AERMET input files for 2011 were obtained from ADEC and the same options were used to re-process 2009 and 2010 and process 2012 and 2013 data..

The PAD A data set was deemed representative of the GCF site based on the following factors:

- The monitoring site is 9.5 km from the GCF.
- There are no complex terrain features between PAD A and the GCF.
- The land uses surrounding the monitoring site and the GCF are similar (both are surrounded by arctic tundra).
- 5-years of hourly meteorological data were measured at PAD A.

Therefore, meteorological data collected at the Pad A monitoring station will be used to model the ambient air quality impacts. AGDC also understands that based on ADEC recommendations, surface meteorological data from A Pad may be used for stacks up to a maximum height of 50 m and that representativeness of the Pad A data may have to be evaluated if stack heights are increased to more than 50 m.

5.2.1 Data Processing

ADEC preprocessed the meteorological data for 2011 with the AERMOD Meteorological Preprocessor, AERMET (version 14134). Meteorological data for 2009 and 2010 were originally processed by the Alaska Industrial Development and Export Authority (AIDEA) with AERMET version 13350. Therefore, data for 2009 and 2010 were re-processed with AERMET version 14134. Meteorological data for 2012 and 2013 were processed with AERMET Version 14134. If

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a newer version of AERMET is available prior to beginning of the modeling analysis, meteorological data for all five years will be re-processed using the newer version of AERMET. It is understood that if a newer version AERMET becomes available during the application review process, ADEC may ask for evaluation of certain modeling scenarios using meteorological data re-processed with the newer version AERMET.

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6. COORDINATE SYSTEM

All receptors and source locations will expressed in the Universal Transverse Mercator (UTM) North American Datum 1983 (NAD 83), Zone 6 coordinate system.

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7. TERRAIN AND LAND USE ANALYSIS

The GCF will be located on the north coast of Alaska. The area does not have any complex terrain within 50 km of the project site. Conversations with ADEC[3] have indicated that terrain would not need to be included in the dispersion modeling analysis. Therefore, the FLAT option in AERMOD will be used.

Land use surrounding the site is low-lying tundra. There are other industrial facilities in the area, but they are widely spaced and not consolidated to any individual location.

[3] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougal/CH2M HILL.

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8. EMISSION UNIT INVENTORY

Table 2 summarizes the emission units to be modeled at the GCF.

Table 2. GCF Emission Units

SOURCE ID	NAME (QUANTITY)	FUEL TYPE	ALLOWABLE OPERATION	RATING/SIZE
S01 – S03	Power Generation Turbines (3)	Natural Gas	8,760 hr/yr	29 MW
S04 – S05	Feed Gas Compressor Turbines (2)	Natural Gas	8,760 hr/yr	22 MW
S06 – S07	CO2 Compressor Turbines (2)	Natural Gas	8,760 hr/yr	11.93 MW
S08 – S11	Emergency Generators (4)	Diesel	Maintenance - 100 hr/yr Other Uses – Emergency Only	1.5 MW
S12 – S15	Heaters (4)	Natural Gas	Combined operation of 3 heaters at full load, 8,760 hr/yr	106.52 MMBtu/hr
S16 – S17	High Pressure Flares (2)	Pilot Gas – 8,760 hr/yr All Other Flammable Materials - Emergency Only		35,625 MM**Btu/hr**
S18 – S19	Low Pressure Flares (2)	Pilot Gas – 8,760 hr/yr All Other Flammable Materials - Emergency Only		990 MM**Btu/hr**
S20 – S23	Fire Pump Generators (4)	Diesel	Maintenance - 100 hr/yr Other Uses – Emergency Only	0.4 MW
S24 – S26	Emergency Generators (3)	Diesel	Maintenance - 100 hr/yr Other Uses – Emergency Only	1.35 MW
S27 – S29	Emergency Generators (3)	Diesel	Maintenance - 100 hr/yr Other Uses – Emergency Only	1.0 MW

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9. EMISSION UNIT RELEASE PARAMETERS

The proposed emission units at the GCF will be modeled as point sources within AERMOD. These emissions will be accounted for in the dispersion modeling to demonstrate that their emissions would not result in a modeled exceedance of the applicable standards. Current facility designs do not include horizontal stacks or caps on stack emission points. AGDC understands that ADEC may make this a condition of the permit for the facility. If horizontal stacks or caps are added, these changes will be incorporated into the modeling for the facility.

Exhaust parameters will be based on information provided by the vendor or engineering estimates. Preliminary stack parameters for the emissions units to be installed at the GCF are summarized in Attachment B.

Preliminary emission rates have been calculated based on current project design and preliminary information from either vendors, specification sheets, or by using AP-42 emission factors. Attachment B also summarizes the emission rates to be modeled for each emission unit and averaging time. Except as noted in sections 9.1, 9.2 and 9.7, the 1-hour, 8-hour and 24-hour averaging periods will be modeled based on the maximum hourly emissions calculated. Annual averaging periods were modeled based on the potential to emit in tons per year. Final emission rates and stack parameters used for the modeling will be supplied with the PSD Construction Permit Application.

9.1 LOAD ANALYSIS

Turbine emissions and stack parameters, such as flow rate and exit temperature, will exhibit some variation with ambient temperature and operating load. Therefore:

- The gas power turbines (S01 to S03) will undergo a load analysis at standby, 50 percent, 66 percent, 75 percent, and 100 percent load for two different temperatures of 20 degrees Fahrenheit (°F) and 80°F (total of 10 operating scenarios).
- The feed gas turbines (S04 to S05) are only expected to operate at 100 percent load for normal operations and will only undergo an ambient temperature analysis for 10°F and 80°F at 100 percent load (total of 4 operating scenarios).
- The CO_2 compressor turbines (S06 to S07) are only expected to operate at 100 percent load for normal operations and will only undergo an ambient temperature analysis for 20°F and 80°F at 100 percent load (total of 4 operating scenarios).
- Different emission profiles for the turbines for normal operation and SU/SD scenarios will also be evaluated in addition to the load analysis. Short-term ambient air modeling (24-hour averaging periods or less) for the three types of turbines (S01 to S07) would include one shutdown and two start-ups. This would be assumed for the 1-hour, 8-hr, and 24-hour averaging periods. The remaining hours would assume normal operations for the rest of

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the averaging period. For example, if a start-up cycle took 10 minutes and a shutdown is completed in 8 minutes, the mass emissions for the hour would be estimated to be twice the mass of a single start-up cycle (indicative of 2 start-ups in a single hour), the mass from a shutdown and mass from normal operations for 32 minutes. The emissions from this hour would used for the maximum hourly emission rate. For 8-hr and 24-hour averaging periods, the emissions from the start-up/ shutdown hours would be added to the emissions for 7 and 23 hours of normal operations respectively.

These loads, temperatures, and emission scenarios were selected based on anticipated demand on the combustion turbines and the range of temperatures expected at the project site. The temperatures 20°F and 80°F were chosen since the combustion turbines will have air inlet heaters with a minimum inlet temperature of 20°F. The maximum temperature on the North Slope is 80°F. The feed gas turbines were identified to have a minimum 10°F minimum temperature range based upon preliminary manufacturer data. The worst-case operating scenario for each type of turbine (power, feed gas, CO_2 compressor) will be used in the facility-wide modeling runs inclusive of all proposed emissions units.

The power turbine, feed gas, and CO_2 compressor turbines each require 10 minutes to startup and 8 minutes to shutdown. In addition to the different normal operating scenarios of the turbines, a SU/SD scenario for each type of turbine will also be evaluated at each operating temperature considered in the load analysis. For each type of turbine, the worst-case SU/SD scenario is two startups and one shutdown (each turbine starting up twice and shutting down once) per hour. Therefore, in the hour with the worst-case SU/SD scenario, the turbines will spend 28 minutes in SU/SD and 32 minutes in full-load operation. Except for CO, for all other pollutants, total mass emissions during 28 minutes of SU/SD are lower than 32 minutes of full-load operation. Stack parameters (temperature, exhaust velocity) during SU/SD are different than full-load operation. For example, hourly NO_X emission from the each power turbine during normal operation is 29 lb/hr (100% load, 20 F ambient temperature) compared to 24.7 lb/hr if the worst-case SU/SD is included in the hour (29 lb/hr for 32 minutes + 9.42 lb/hr for SU/SD for 28 minutes). For CO, hourly emissions are slightly higher than full-load operation when SU/SD emissions are considered in an hour.

Table 3 provides a matrix of scenarios to be considered in the load analysis of the turbines.

Table 3. Turbine Operating Scenarios for Load Analysis

TURBINES	LOADS	AMBIENT TEMPERATURES (F)	TOTAL SCENARIOS
Power Turbines	Normal Operation – 0%, 50%, 66%, 75%, and 100%, and SU/SD	20, 80	12
Feed Gas Turbines	100%, SU/SD	10, 80	4
CO_2 Compressor Turbines	100%, SU/SD	20, 80	4

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9.2 OPERATING LIMITS

The emergency generators are restricted to annual operation of 100 hours per year for maintenance. They are not restricted for emergency use. For the PSD modeling, emissions are estimated based on 500 hours per year of operation.

The emergency flares will be assumed to operate full time on the pilot and purge gas operations and emissions associated with pilot gas burning will be modeled. No emergency flaring scenarios will be modeled.

Normal operations of the GCF would also have a maximum of three of the four heating units (S12 to S15) operating at any given time. The fourth unit would be considered a back-up unit and emissions from the backup unit will not be included in the dispersion modeling. The three heaters included in the ambient air modeling will be identified by determining which three of the four heaters would result in the highest potential ground level concentration for each pollutant and averaging period modeled.

No other operating limits are proposed.

9.3 HORIZONTAL OR CAPPED STACKS

No horizontal stacks or rain caps will be used at the GCF.

9.4 HAUL ROADS, STOCK PILES, AND OTHER FUGITIVE EMISSIONS

Fugitive emissions are not considered in this modeling analysis since they are not part of the project design. Vehicle traffic emissions within the site would be negligible because the surface is wet and graveled.

9.5 INCREMENT MODELING CONSIDERATIONS

An ambient air quality analysis will be conducted for pollutants and averaging periods that exceed the SIL of the PSD Class II Increments. The PSD Class II Increments are used to protect the area from a substantial increase in ambient concentrations above baseline concentrations in airsheds designated as attainment or unclassified. Baseline concentration is the reference point for determining air quality deterioration in an area. Baseline concentration is essentially the air quality existing at the time of the first complete PSD permit application submittal affecting an area and the date of the submittal is the “baseline date” or the “minor source baseline date”. This date marks the point in time after which actual emissions changes from all sources affect the available increment or maximum allowable increase over the baseline. The minor source baseline dates for each pollutant subject to PSD modeling for the project is summarized in Table 4.

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Table 4. PSD Baseline Dates

POLLUTANT	BASELINE DATE
NO_2	February 8, 1988[a]
PM_{10}	November 13, 1978[a]
$PM_{2.5}$	November 2, 2012[b]

Notes:
a. Based on 18AAC50.020 for the Northern Alaska Intrastate Air Quality Control Region.
b. Based on December 19, 2013 meeting with ADEC

The minor source baseline date for NO_2 is 1988 and the baseline date for PM_{10} is 1978. Given that these dates for NO_2 and PM_{10} are over 25-years ago, it could be conservatively assumed that the background concentrations monitored at the neighboring CCP facility would be representative of competing sources of PSD Class II Increments if the monitored values are below the Class II increment. The maximum modeled design value for each PSD Class II Increment and averaging period exceeding the SIL will be identified in the AERMOD modeling results. The contributions from competing nearby sources and general background concentrations will be accounted for through the use of the CCP monitored data if the resultant is below the Class II increment. The CCP monitored data will be combined with the modeled concentrations. The combined concentration will then be compared to the PSD Class II Increments for NO_2 and PM_{10}.

If the combined concentration of the CCP monitored data and the modeled concentration are above the Class II increment, emissions from competing sources will be modeled. The farthest distance from the GCF where concentrations above the SIL are modeled will be used as a radius of a circle surrounding the GCF. Sources within the circle which consume increment will be considered competing sources. The emissions from these sources will be modeled together with the GCF emissions to estimate the increment consumed by all increment consuming sources within the area of influence of the GCF. The increment consumed must be below the increment limits established in 40 CFR 52.21.

The minor source baseline date for $PM_{2.5}$ is November 2012, which is the date established by the first complete PSD application received by ADEC where $PM_{2.5}$ triggered PSD review. After the minor source baseline date, any increase in actual emissions (from both major and minor sources) consumes the PSD increment for that area. Major source baseline date, which precedes the trigger date is the date after which actual emissions increases associated with construction at any major stationary source consume the PSD increment. Trigger date is the date when the major source baseline date becomes effective and must precede the minor source baseline date. For $PM_{2.5}$, the major source baseline date and the trigger date is October 2010 and October 2011, respectively, which are established by EPA. A PSD permit was issued by ADEC for the Endicott Production Facility operated by BPXA in July 2011, which triggered PSD review for $PM_{2.5}$ (Technical Analysis Report, ADEC Air Quality Control Construction Permit No. AQ0181CPT07). AGDC understands ADEC's interpretation that since the Endicott permit was issued after the major source baseline date, Endicott emissions consume increment. However the Endicott Production Facility is located 20 km away and the plume would be fairly dispersed by the time it reached the GCF.

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Additionally, AERMOD does not currently include a chemistry algorithm for $PM_{2.5}$ precursors. Therefore, the Endicott Production Facility will not be included in the increment analysis. AGDC also understands that the Interior Energy project (minor source) received a construction permit in 2014, which is proposed to be located approximately 7 km from GCF and will also consume $PM_{2.5}$ increment. Although the Interior Energy project has not been constructed yet, AGDC assumes that it will be proceed as proposed.

It is assumed for this analysis that the GCF and Interior Energy are the only increment consuming sources within 20 km. Therefore, contribution from competing source concentrations would not be required and background monitored concentrations would not be added to the model design value for comparison to the $PM_{2.5}$ Class II Increments.

9.6 OFFSITE EMISSION UNITS

Based on the information available at the time of submittal of this protocol, the modeling analysis will not address any nearby emission units that may operate concurrently with the GCF emission units. The GCF facility is designed to provide its own primary and backup power.

9.7 INTERMITTENT EMISSIONS

Intermittent emission sources, such as the emergency generators, will be modeled at their maximum emission rate for short term averages or the predicted PTE for the long term (annual) averages. However, the gas turbines (S01-S07) will undergo a load analysis, including SU/SD scenarios, to determine the worst case resultant modeled concentration for inclusion in the appropriate modeled averaging time and pollutant.

Emergency generator emissions associated with the GCF and supporting facilities will be modeled at their maximum rate except for the 1-hr NO_2 modeling demonstration. Emissions from emergency generators will be included in the 1-hour NO_2 modeling analysis by using the annual average hourly emission rate. That is the annual potential to emit evenly distributed throughout the year. This is consistent with EPA guidance for modeling intermittent operating sources similar to those to be installed at the GCF (EPA, 2011). The expected normal operations of the emergency generators would be only for routine maintenance and testing. This is limited to 100-hours per year per generator. The annual potential to emit for the emergency generators will be estimated at 500 hours so the annual emission rates will be based on this number of hours of use. Additional details on the 1-hr NO_2 modeling demonstration are outlined in Section 10.2 below.

The purpose of the emergency flares (2 HP flares and 2 LP flares) is to safely depressurize the process at GCF by burning the process gas in case of emergency. Emergency situations could include fire within a module, equipment or instrumentation failure, failure at the upstream CGF/CCP that may lead to over pressurization, or failure in the downstream pipeline system that may also lead to over pressurization. In any of these unlikely events, the flares will be used to burn the process gas and quickly depressurize the process. All or a number of turbines will be off-line during any of these unlikely events.

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In order to maintain appropriate pressure in the flare lines, pilot gas consisting of treated natural gas will be burned at all times and is part of normal operation of the facility. Emissions associated with pilot gas burning will be modeled. However, emissions associated with emergency flaring scenarios will not be modeled.

The flares are equipped with a knock-out drum to collect liquids since liquids at the flare tip could result in unsafe operation. In the unlikely event the flare is in operation and the knock-out drum overflows, liquids will be diverted to the burn pit where they will be combusted. This scenario is extremely rare as the flare is not expected to collect significant amounts of liquids and the flare knock-out drum is sufficiently sized to collect liquids based on flaring scenarios developed in this engineering phase. For the same reasons mentioned for the flares, emissions associated with the burn pit will not be modeled. There are no emissions associated with the burn pit during normal operation of the facility, and therefore, will not be included in the modeling of the normal operation of the facility.

9.8 SOURCE GROUPS

The load analysis for the turbines will include each turbine and load as an individual source group in AERMOD. The full facility modeling analysis for comparison to the applicable thresholds will only model the total facility as a single source group.

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10. POLLUTANT SPECIFIC MODELING CONSIDERATIONS

10.1 NO_2

Initially, complete conversion of NO_x predicted concentrations to NO_2 will be assumed. If this assumption leads to predicted exceedances of the NAAQS or significance criteria for NO_2, the default ambient ratio of 0.75 (that is, 75 percent of NO_X impacts are converted to NO_2) will be applied to annual predicted concentrations, and the default ratio of 0.80 will be applied to 1-hour predicted concentrations to determine NO_2 concentrations (EPA, 2005; EPA, 2011).

If further refinements to characterize the 1-hour predicted NO_2 concentrations are required, the predicted impact will instead be estimated by pairing the maximum modeled concentration with the 98th percentile hour-of-day background NO_2 concentrations. The 98th percentile hour-of-day background NO_2 concentrations for 2008 through 2011, are presented in Appendix A along with the spreadsheet showing the top 8 high hour-of-day concentrations.

If predicted NO_2 impacts require even more refinement, the plume volume molar ratio method (PVMRM) will be used. PVMRM options would assume an initial in-stack NO_2/NO_X ratio of 0.5 and an out-of-stack NO_2/NO_X ratio of 0.9, which are default values. If specific in-stack NO_2/NOx data is available from manufacturers, they will be used. Based on recommendation from ADEC, corresponding hourly ozone data from the A Pad monitoring station will be used. ADEC will be contacted if AGDC plans to use PVMRM in modeling. It is understood that AGDC would need to obtain EPA approvals prior to accepting PVMRM as it is a non-regulatory modeling option.

10.2 $PM_{2.5}$

Direct $PM_{2.5}$ will be modeled using AERMOD for this analysis. Secondary $PM_{2.5}$ will be evaluated using a qualitative approach. Preliminary NO_x emissions would exceed the significant $PM_{2.5}$ precursor emission levels. Secondary formation of NO_x to particulate nitrate and ammonia nitrate is dependent on many factors, such as meteorology, frequency and duration of stagnant air conditions, atmospheric stability, temperature, and available ammonia to convert NO_x to ammonia nitrate. Minimal transformation of NO_x to particulate is expected because of the following:

- Selective Catalytic Reduction control on the exhaust stacks is not proposed as Best Available Control Technology; therefore, no additional ammonia would be emitted to the atmosphere.
- Ambient concentrations of $PM_{2.5}$ are well below the NAAQS and it is anticipated that the additional NO_x emitted by GFC would not significantly add to the nitrate portion of the particulate because of the other NO_x sources in the area.

Based on the potential to emit of the sources in the Prudhoe Bay area, 35,985 tons of NO_x could be emitted from stationary fuel combustion sources.. The proposed project conservatively estimated

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the NO_x emissions would be 806 tons per year. This is approximately 2.2-percent of the total NO_x emissions that could be emitted in the Prudhoe Bay area. If particulate concentrations near the facility increased 2 percent, it would be expected that the NAAQS would not be exceeded.

The proposed project would not add a significant amount of ammonium nitrate to the atmosphere and therefore would not require modeling of the conversion of NO_x to particulate. Further qualitative discussions of secondary $PM_{2.5}$ formation will be included in the PSD Construction Permit Application.

10.3 PM-10 DEPOSITION

Deposition or particle size distribution options within AERMOD will not be required for the GCF modeling.

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11. BUILDING DOWNWASH

AERMOD can account for building downwash and cavity zone effects. Building influences on stacks will be calculated by incorporating the updated EPA Building Profile Input Program for use with the plume-rise model-enhancement algorithm (BPIP-PRIME). The stack heights in the dispersion modeling will be the actual stack height or Good Engineering Practice stack height, whichever is less.

The GCF stack locations, heights, building locations, and dimensions will be input to BPIP-PRIME. The BPIP-PRIME output will be used in the AERMOD model to account for downwash and building wake affects.

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12. AMBIENT AIR BOUNDARY

There will be two property boundaries used for this analysis: (1) boundary surrounding the main GCF and facilities Pads, and (2) boundary surrounding the permanent work camp to support the GCF. A road will be connecting the two pads and there will be tundra everywhere else in-between.

Following ADEC Policy and Procedure (No. 04.02.108 effective October 8, 2004) on ambient air quality issues at worker housing, the permanent work camp would not be considered ambient air because:

1. the worker housing is secured, access is controlled, and access is limited to workers or those with business obligations;

2. the personnel at the work camp would be exclusively to support the GCF (no family housing); and

3. the employees would be working shift work or on call to support the GCF.

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13. WORKER HOUSING AREAS

While worker housing will be provided, the housing is not for family, all workers at the GCF will be on call to support the GCF operations, and the housing is secured, access is controlled, and access is limited to workers or those with business obligations. Therefore, the working housing area will not be treated as ambient air. Section 12 and Section 14 describe the property boundary for the analysis.

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14. RECEPTORS

The AERMOD receptor grid will consist of receptors placed at the ambient air boundary. The Cartesian-grid receptors will be placed beyond the project's site boundary, spaced at increasing distance from the origin. The project's pad or actual fenced property boundary (whichever covers more area), will be used as the ambient air boundary.

14.1 RECEPTOR PLACEMENT

Property boundary receptors will be placed at 25-meter intervals around the permanent work camp pad, the GCF main pad, including the facilities pad, and the road connecting the two pads. Beyond the project's property boundaries, receptor spacing will be as follows:

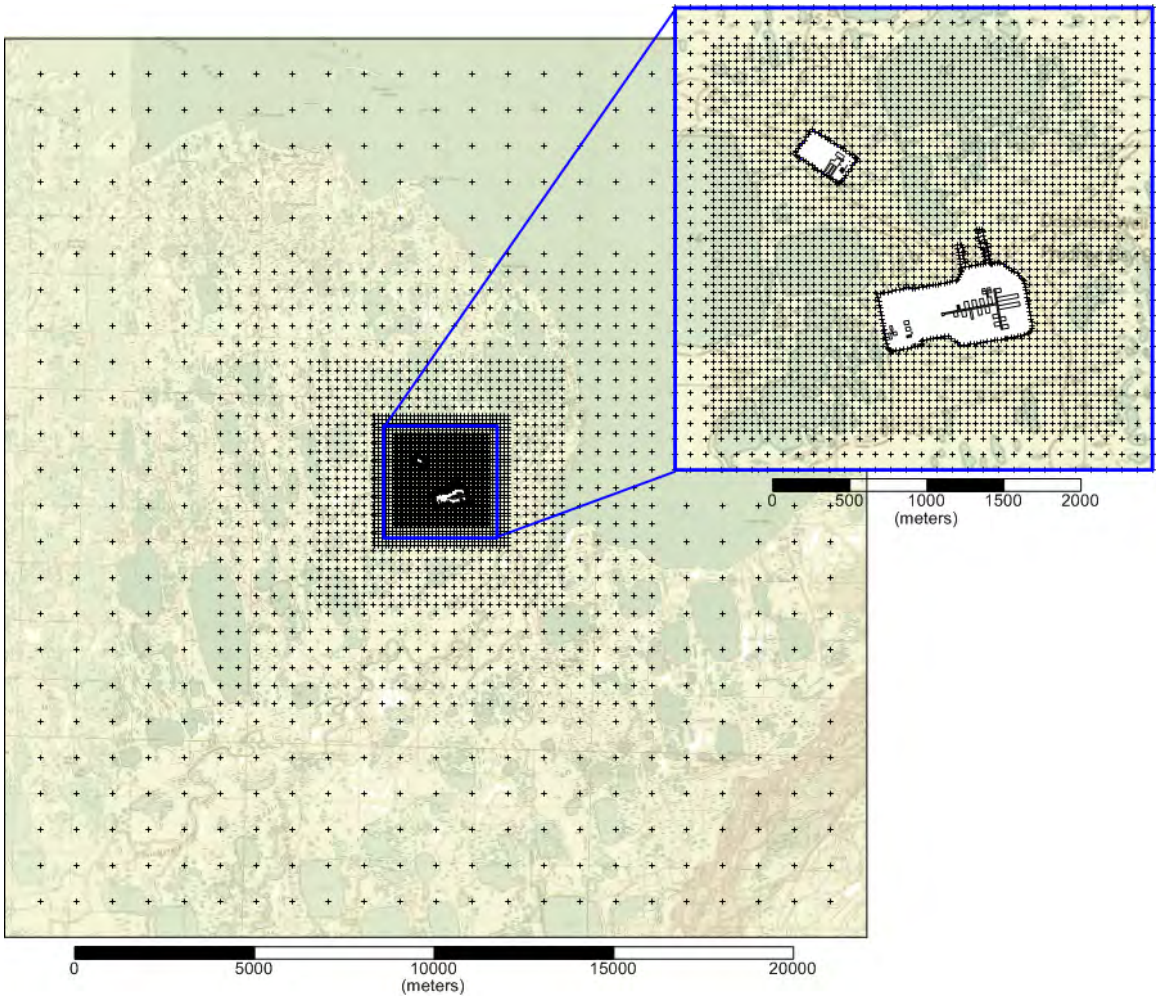
- A 25-meter spaced rectangular grid which covers the GCF facility pad and work camp pad, with a 100-m buffer in each compass direction.
- 50-meter spacing from beyond the 100-m buffer to 500 meters
- 100-meter spacing from beyond the 500 meters to 1 km
- 250-meter spacing from beyond 1 km to 2.5 km
- 500-meter spacing from beyond 2.5 km to 5 km

Receptors will be placed on the tundra between the two pads. All receptors and source locations will expressed in the Universal Transverse Mercator (UTM) North American Datum 1983 (NAD 83), Zone 6 coordinate system.

Figure 4 shows the planned facility AERMOD receptor map and pad footprints. The actual facility footprints may vary slightly as presented in the figure prior to the final PSD application being submitted, however, the general receptor spacing will be consistent as described above.

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Figure 4. AERMOD Receptor Map



14.2 FLAGPOLE RECEPTORS

Flagpole receptors will not be used in this modeling analysis.

14.3 MULTIPLE MODEL RUNS AND MAXIMUM IMPACT AREA ANALYSIS

The base modeling receptor grid will be extended if predicted concentration gradients are increasing at the edge of the grid. Similarly, the base (coarse) receptor grid will be supplemented with receptors at closer (tighter) receptor spacing, where appropriate, so that the maximum points of impact can be identified. The tighter receptor spacing will consist of a Cartesian grid with a spacing of 50 meters around the point of impact, extending to the neighboring receptors in the coarse grid.

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15. OFF-SITE EMISSION UNITS AND BACKGROUND AIR QUALITY DATA

15.1 OFF-SITE SOURCES

Although there are additional emission sources near the proposed GCF, none of the off-site sources will be modeled. This is based on the representativeness of the CGF/CCP collected ambient data as representative of the nearby off-site sources. Section 15.2 describes the data in detail.

15.2 BACKGROUND AIR QUALITY DATA

Based on EPA's *Guidelines on Air Quality Models* (2005) Section 8.2.2, two options are available to determine the background concentration near isolated sources: (a) use air quality data collected in the vicinity of the source or (b) if there are no monitors located in the vicinity of the source, use a "regional site". The neighboring CCP, owned by British Petroleum, operates an ambient monitoring station and monitors NO_2, $PM_{2.5}$, and PM_{10}. The CCP is located approximately 1 km east of the proposed GCF. Therefore, the contributions from competing nearby sources and general background concentrations of these pollutants should be included in the CCP monitored data. The CCP recently installed a CO monitor, and hourly data for 2014 has been submitted to ADEC for review, which is expected to be reviewed and available for use by summer 2015. If this data is not available for use when modeling is finalized for the application, the Fairbanks, Alaska monitoring station data will be used for background CO concentrations.

A summary of the monitored concentrations from 2008 through 2012 is presented in Table 5.

Table 5. Background Air Concentrations (2008 to 2012)

Pollutant	Averaging Time	2008		2009		2010		2011		2012		Maximum
		ppm	µg/m³	ppm	µg/m³	ppm	µg/m³	ppm	µg/m³	ppm	µg/m³	µg/m³
NO_2	1-hour (Max.)	0.103	193.7	0.096	180.5	0.110	206.8	0.094	176.8	0.104	195	206.8
NO_2	1-hour (98th Percentile)	0.084	157	0.075	141	0.083	156	0.078	146.7	0.062	116.6	139.8[d]
NO_2	Annual [a]	0.010	18.8	0.010	18.8	0.011	20.6	0.009	16.9	0.006	11.0	20.6
CO[c]	8-hour	3.2	3606	3.2	3603	4.1	4620	4.1	4620	3.6	4056	4620
CO[c]	1-hour	5.3	6057	5.3	6057	6.4	7314	6.4	7314	6.7	7657	7657
PM_{10}	24-hour (Max.)	—	N/A	—	N/A	—	N/A	—	33.2	—	27.3	33.2
PM_{10}	24-hour (H2H.)	—	N/A	—	N/A	—	N/A	—	26.2	—	20.0	26.2
PM_{10}	Annual [b]	—	N/A	—	N/A	—	N/A	—	6.5	—	5.5	6.5
$PM_{2.5}$	24-hour (Max.)	—	N/A	—	N/A	—	N/A	—	10.1	—	10.0	10.1
$PM_{2.5}$	24-hour (98th Percentile)	—	N/A	—	N/A	—	N/A	—	9.0	—	7.1	9.0
$PM_{2.5}$	Annual [b]	—	N/A	—	N/A	—	N/A	—	3.2	—	2.6	2.9[b]

Notes:

[a] Annual Arithmetic Mean.

[b] Average of 2 years of available data.

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[c] Data from EPA AQS System (EPA, 2013a)
[d] 3-year average for 2010, 2011, and 2012 rather than the maximum.
N/A = Not Applicable (i.e., data not available)
ppm = parts per million

Preliminary discussions with ADEC[4] have indicated that the background concentrations listed in Table 5 would be representative of the conditions at the GCF site.

The 1 hour background concentration for NO_2 will be based on the 3-year average of 98th percentile of daily maximum 1-hour average concentrations, or 139.8 µg/m³ (average for the period between 2010 and 2012). Since this concentration is high, hourly variation of 3-year average maximum daily 1-hour average concentrations may be used following EPA's latest modeling guidance for NO_2 (Tyler Fox Memo dated March 1, 2011).

The annual average background concentration for NO_2 will be based on the highest annual monitored concentration from the most-recent 3-year period, or 20.6 µg/m³.

The 1 hour and 8 hour background concentrations for CO will be based on the highest monitored concentrations from the most-recent 5-year period (period between 2008 and 2012), or 7,657 and 4,620 µg/m³, respectively.

The annual and 24 hour background concentrations for PM_{10} will be based on highest monitored concentration from the most-recent available data for two years (for 2011 and 2012), or 6.5 and 33.2 µg/m³, respectively.

The 24 hour background concentration for $PM_{2.5}$ will be based on highest 98th percentile 24-hour concentrations from the most-recent two years (for 2011 and 2012) of available data, or 9.0 µg/m³.

The annual background concentration for $PM_{2.5}$ will be based on average annual monitored concentrations from the most-recent two years (2011 and 2012) of available data, or 2.9 µg/m³.

[4] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

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16. DESIGN CONCENTRATIONS

The maximum impacts predicted from full facility modeling (modeled concentrations) would be compared to the applicable SIL for each pollutant and averaging period modeled. If the SIL is not exceeded, it is assumed the GCF would not cause or significantly contribute to an exceedance of the NAAQS or PSD increment.

If the SIL is exceeded for any pollutant and averaging period, then the impacts from the facility would be compared to the applicable NAAQS, increment, and significant monitoring threshold while including background concentration, when applicable. The model design value for each pollutant and averaging time modeled for comparison against the NAAQS and increment would be calculated by AERMOD or by post-processing of the modeled results.

For the NAAQS analysis, the maximum modeled design value for each NAAQS pollutant and averaging period exceeding the SIL will be identified in the AERMOD modeling results.

The increment analysis is described in Section 9.5.

The design concentration for each modeled pollutant and averaging period is described in Table 6.

For comparison to the SILs, the modeled concentrations for different pollutants and averaging times will be based on the following:

- Annual average PM_{10} and NO_2 – Highest annual concentration for the 5-year period.
- Annual average $PM_{2.5}$ – Highest 5-year average concentration.
- 24-Hour average PM_{10} – Highest 24-hour concentration for the modeling period.
- 24-hour average $PM_{2.5}$ – Highest 5-year average 24-hour concentration
- 8-hour and 1-hour average CO – Highest concentration for the modeling period.
- 1-hour average NO_2 – Highest 5-year average daily maximum 1-hour concentration.

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17. POST-PROCESSING

The model design value for each pollutant and averaging time modeled for comparison against the NAAQS and increment would be calculated by AERMOD or by post-processing of the modeled results. Currently, it is not anticipated that post-processing of the AERMOD output would be required since the most recent version of AERMOD has the capability to output modeled results in the form of the standard. If it is later determined that post processing would be required, ADEC would be contacted to describe the post processing and the PSD Construction Permit Application would contain details as to the post-processing of the modeled results.

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18. MODELING RESULTS

The NAAQS, PSD Class II increments, Significant Impact Levels (SILs) and significant monitoring concentrations applicable to the proposed GCF are summarized in Table 6. Modeling results will be compared to the SILs and Significant Monitoring Concentrations (SMC).

Table 6. Applicable Ambient Air Quality Standards and Significance Levels

Pollutant	Averaging Period	Primary NAAQS[e] (µg/M^3)	Class II Increment (µg/M^3)	Significant Impact Level (µg/M^3)	Significant Monitoring Concentration (µg/M^3)
PM_{10}	24-Hour	150[a]	30[b]	5	10
PM_{10}	Annual	-	17	1	--
$PM_{2.5}$	24-Hour	35[c]	9[b]	1.2[g]	0
$PM_{2.5}$	Annual	12[f]	4	0.3[g]	--
CO	8-Hour	10,000	--	500	575
CO	1-Hour	40,000	--	2,000	--
NO_2	Annual	100	25	1	14
NO_2	1-Hour	188[d]	--	8	--

Notes:
[a] Not to be exceeded more than once per year on average, over 3 years.
[b] Allowed to be exceeded once per year.
[c] Three-year average of the 98th percentile of the 24-hour concentration
[d] 98th percentile of 24-hour daily maximum, averaged over 3 years.
[e] The NAAQS for the pollutants included in this modeling analysis are equivalent to the state ambient air quality standards for those pollutants.
[f] Averaged over 3 years.
[g] Interim SIL on case-by-case basis
-- : no standard

µg/m^3 = micrograms per cubic meter

It should be noted that in January 2013, the $PM_{2.5}$ SILs under 40 CFR 51.166(k)(2) and 40 CFR 52.21(k)(2) were vacated and remanded the portions of EPA's rule regarding the SIL to exempt sources from cumulative source modeling [Sierra Club v. EPA, 705 F.3d 458 (D.C. Circuit 2013)]. On March 4, 2013, EPA issued Draft Guidance for $PM_{2.5}$ Permit Modeling (Stephen D. Page, Director, OAQPS) that provided preliminary recommendations describing how a stationary source seeking a PSD permit can demonstrate that it will not cause or contribute to a violation of the NAAQS and PSD increments. According to the EPA's draft guidance, with additional justification, the permitting authority may use the same $PM_{2.5}$ SILs that were vacated to demonstrate that a full cumulative source impact analysis is not needed. The first step in this analysis is a comparison of the recent historical representative background concentration of $PM_{2.5}$ to the $PM_{2.5}$ NAAQS. If the difference between background $PM_{2.5}$ concentration and the $PM_{2.5}$ NAAQS is greater than the value of the vacated $PM_{2.5}$ SIL, the modeled $PM_{2.5}$ impacts of the new emissions can be compared to that SIL before conducting a cumulative analysis.

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On January 22, 2013, the U.S. Court of Appeals also vacated the parts of the two PSD rules (40 CFR 51.166 and 40 CFR 52.21) establishing the Significant Monitoring Concentration (SMC), finding that EPA was precluded from using the $PM_{2.5}$ SMC to exempt permit applicants from the statutory requirement to compile preconstruction monitoring data. As a result, permitting of new or modified sources requires submittal of monitoring data prior to construction regardless of the source's impact. As a result, $PM_{2.5}$ concentrations from a representative monitor must be submitted as part of the PSD permit application because the Project's estimated $PM_{2.5}$ emissions are greater than the SER.

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19. OZONE IMPACTS

A qualitative analysis of impacts to ozone (O_3) will be conducted for this project.

Ozone is a secondary pollutant that is formed through chemical reactions between NO_x and VOCs in the presence of sunlight. Tropospheric concentrations are influenced by the intensity of solar radiation, and the relative concentrations of NO_x and VOCs. Typically in areas where NOx concentrations are high relative to VOCs, ozone production is less efficient. Additionally, seasonal and diurnal variations can occur in response to sunlight, and other environmental variables such as temperature and humidity.

Based on the potential to emit of existing sources, 35,985 tons of NO_x and 446 tons of VOC could be emitted from stationary fuel combustion sources in the Prudhoe Bay area (combined NOx and VOC emissions of 36,431 tpy). The proposed GCF would conservatively have an estimated combined NO_x and VOC emissions of 975 tpy. This is approximately 2.7 percent of the overall NO_x and VOC emissions from stationary fuel combustion sources in the Prudhoe Bay Area for 2011. This does not include the emissions from area, on-road, and nonroad sources of emissions.

Preliminary A Pad monitoring data available for O_3 has a maximum recorded 8-hour O_3 concentration of 52 parts per billion. This concentration is 30 percent less than the NAAQS of 75 parts per billion for the 4th highest daily 8-hour concentration averaged over 3 years. Therefore, an approximate 2.6 percent increase in ozone precursor emissions from the GCF would not result in an ozone NAAQS exceedance.

The impact to ambient ozone would be expected to be less than significant because of the small increase in overall ozone precursors of NO_x and VOC from the proposed GCF. Further qualitative discussions of the proposed GCF impacts on ozone concentrations will be included in the PSD Construction Permit Application.

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20. QUALITATIVE ASSESSMENTS

A qualitative assessment of the impacts of the project on air quality due to associated growth of the project, secondary $PM_{2.5}$ impacts and ozone precursors would be conducted. Details of the qualitative assessments are presented in Sections 21.2, 10.2, and 19, respectively.

In addition, a qualitative assessment for temporary construction activities will be included in the PSD permit application as necessary. 18AAC50.215(b)(2)(A) excludes conducting a quantitative analysis of construction activities if construction lasts less than 24-months. Construction plans for the GCF are very preliminary at this time. Use of available resources in the area is being explored to reduce overall construction impacts. Additionally, the GCF will be brought to the site in pre-constructed modules and construction duration is anticipated to be much less than traditional building activities.

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21. ADDITIONAL IMPACT ANALYSES

21.1 VISIBILITY, SOIL, AND VEGETATION ANALYSIS

To address these additional impact analyses required under 40 CFR 52.21(o), adopted by reference in 18AAC50.040(h)(3), the modeled results for pollutants exceeding PSD significant mass emission rates will be compared to the Secondary NAAQS. The Secondary NAAQS are to protect welfare, which includes protection against decreased visibility and damage to animals, crops, vegetation and buildings.

The Arctic National Wildlife Refuge (ANWR), a US Fish and Wildlife Service-managed federal wildness area located on the North Slope is approximately 90 km east of the project site and is the nearest landmass managed by either the US Fish and Wildlife Service, US National Park Service, or the US Department of Agriculture Forest Service. ANWR is also a Class II area according to EPA definitions.

The GCF plume blight impacts at ANWR will be assessed using the VISCREEN model, but at a distance of 50 km from the project site, which is the maximum distance recommended for plume blight analysis using VISCREEN. The VISCREEN model calculates the perceived plume's impact through analyzing the change in contrast and color of the background within the area. The project annual PTE will be used as input into VISCREEN, along with a conservative annual background visual range of 258 km. This background visual range is for Denali National Park, which was provided in the Alaska Modeling Guidance (ADEC, 2013a) to assess impacts at Class I areas. The results of the analysis will be compared to the conservative Class I significance thresholds of 2.0 for Delta E (color) and 0.05 for contrast. The default value of 40 ppb will be used for O_3 concentration for the analysis.

21.2 ASSOCIATED GROWTH ANALYSIS

Associated growth impacts on air quality will be conducted qualitatively for the GCF, support facilities, and associated permanent work camp to be constructed as part of the PSD Construction Permit Application to support the GCF.

21.3 VISIBILITY MONITORING

Visibility monitoring is not required or proposed for the GCF project.

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22. CLASS I ANALYSES

A Class I analysis would be required for pollutants triggering PSD review at Class I areas near the GCF. The proposed GCF would be located approximately 711 km from Denali National Park. This is the nearest federally-designated Class I area to the project site.

The Federal Land Managers allow an emissions/distance (Q/D) factor of 10 to be used to screen out from air quality related values (AQRV) review sources located greater than 50 km from a Class I area (National Park Service, U.S. Department of the Interior, 2010). This screening criterion applies to all AQRVs such that where Q/D is 10 or less for a given Class I area, no further AQRV review is required for that area. For purposes of applying the Q/D screening criterion, emissions are calculated as the maximum daily normal operations scenario total of SO_2, NO_x, PM_{10}, and H_2SO_4 on an annual emissions basis (in tpy). These emissions are then divided by the distance (in km) from the Class I area.

The proposed GCF total of SO_2, NO_x, PM_{10}, and H_2SO_4 emissions would be approximately 890 tpy. This includes 24-hr operations of the turbines and heaters with 1-hr per day operations of the emergency generators for testing and maintenance. These preliminary emissions result in a Q/D for Denali National Park of 1.3. This is less than the Federal Land Managers recommended screening threshold of 10; therefore, the proposed GCF would be considered to have a less than significant impact on Denali National Park.

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Appendix A
Diurnal Background NO2 Concentrations

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HOUR OF DAY	NO_2 BACKGROUND CONCENTRATION (PPB)
1	56
2	55
3	58
4	60
5	58
6	58
7	55
8	53
9	57
10	54
11	57
12	54
13	52
14	58
15	55
16	61
17	59
18	57
19	55
20	56
21	57
22	57
23	57
24	57

Notes:
98^{th} percentile diurnal averages for the CCP

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Appendix B
Preliminary Stack Parameters and Emission Rates

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Appendix B.1: Stack Parameters for AERMOD Modeling

Model ID	Description[1]	UTM X (m, NAD83)	UTM Y (m, NAD83)	Stack Height (m)	Exit Temperature (K)	Velocity (m/s)	Diameter (m)
S01_1.1	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 1	441578.6	7802277.6	24.4	763.0	27.8	3.0
S01_1.2	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 2	441578.6	7802277.6	24.4	768.1	25.4	3.0
S01_1.3	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 3	441578.6	7802277.6	24.4	755.7	23.3	3.0
S01_1.4	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 4	441578.6	7802277.6	24.4	733.6	19.8	3.0
S01_1.5	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 5	441578.6	7802277.6	24.4	607.4	5.7	3.0
S01_1.11	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 11	441578.6	7802277.6	24.4	789.1	27.0	3.0
S01_1.12	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 12	441578.6	7802277.6	24.4	773.7	23.6	3.0
S01_1.13	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 13	441578.6	7802277.6	24.4	777.6	22.5	3.0
S01_1.14	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 14	441578.6	7802277.6	24.4	784.5	20.4	3.0
S01_1.15	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 15	441578.6	7802277.6	24.4	641.5	5.7	3.0
S01_1.6	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 6	441578.6	7802277.6	24.4	803.8	25.1	3.0
S01_1.7	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 7	441578.6	7802277.6	24.4	791.3	21.8	3.0
S01_1.8	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 8	441578.6	7802277.6	24.4	800.7	20.9	3.0
S01_1.9	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 9	441578.6	7802277.6	24.4	817.3	19.3	3.0
S01_1.10	GAS TURBINE POWER GENERATOR Unit: S01 Scenario: 10	441578.6	7802277.6	24.4	676.2	5.7	3.0
S02_1.1	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 1	441529.2	7802268.6	24.4	763.0	27.8	3.0
S02_1.2	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 2	441529.2	7802268.6	24.4	768.1	25.4	3.0
S02_1.3	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 3	441529.2	7802268.6	24.4	755.7	23.3	3.0
S02_1.4	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 4	441529.2	7802268.6	24.4	733.6	19.8	3.0

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Model ID	Description[1]	UTM X (m, NAD83)	UTM Y (m, NAD83)	Stack Height (m)	Exit Temperature (K)	Velocity (m/s)	Diameter (m)
S02_1.5	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 5	441529.2	7802268.6	24.4	607.4	5.7	3.0
S02_1.11	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 11	441529.2	7802268.6	24.4	789.1	27.0	3.0
S02_1.12	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 12	441529.2	7802268.6	24.4	773.7	23.6	3.0
S02_1.13	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 13	441529.2	7802268.6	24.4	777.6	22.5	3.0
S02_1.14	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 14	441529.2	7802268.6	24.4	784.5	20.4	3.0
S02_1.15	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 15	441529.2	7802268.6	24.4	641.5	5.7	3.0
S02_1.6	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 6	441529.2	7802268.6	24.4	803.8	25.1	3.0
S02_1.7	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 7	441529.2	7802268.6	24.4	791.3	21.8	3.0
S02_1.8	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 8	441529.2	7802268.6	24.4	800.7	20.9	3.0
S02_1.9	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 9	441529.2	7802268.6	24.4	817.3	19.3	3.0
S02_1.10	GAS TURBINE POWER GENERATOR Unit: S02 Scenario: 10	441529.2	7802268.6	24.4	676.2	5.7	3.0
S03_1.1	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 1	441478.2	7802259.4	24.4	763.0	27.8	3.0
S03_1.2	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 2	441478.2	7802259.4	24.4	768.1	25.4	3.0
S03_1.3	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 3	441478.2	7802259.4	24.4	755.7	23.3	3.0
S03_1.4	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 4	441478.2	7802259.4	24.4	733.6	19.8	3.0
S03_1.5	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 5	441478.2	7802259.4	24.4	607.4	5.7	3.0
S03_1.11	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 11	441478.2	7802259.4	24.4	789.1	27.0	3.0
S03_1.12	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 12	441478.2	7802259.4	24.4	773.7	23.6	3.0
S03_1.13	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 13	441478.2	7802259.4	24.4	777.6	22.5	3.0
S03_1.14	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 14	441478.2	7802259.4	24.4	784.5	20.4	3.0
S03_1.15	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 15	441478.2	7802259.4	24.4	641.5	5.7	3.0

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Model ID	Description[1]	UTM X (m, NAD83)	UTM Y (m, NAD83)	Stack Height (m)	Exit Temperature (K)	Velocity (m/s)	Diameter (m)
S03_1.6	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 6	441478.2	7802259.4	24.4	803.8	25.1	3.0
S03_1.7	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 7	441478.2	7802259.4	24.4	791.3	21.8	3.0
S03_1.8	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 8	441478.2	7802259.4	24.4	800.7	20.9	3.0
S03_1.9	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 9	441478.2	7802259.4	24.4	817.3	19.3	3.0
S03_1.10	GAS TURBINE POWER GENERATOR Unit: S03 Scenario: 10	441478.2	7802259.4	24.4	676.2	5.7	3.0
S04_1.1	FEED GAS COMPRESSOR GAS TURBINE Unit: S04 Scenario: 1	441693.7	7802130.9	41.1	789.7	22.3	3.0
S04_1.2	FEED GAS COMPRESSOR GAS TURBINE Unit: S04 Scenario: 2	441693.7	7802130.9	41.1	812.1	67.0	3.0
S05_1.1	FEED GAS COMPRESSOR GAS TURBINE Unit: S05 Scenario: 1	441684.1	7802181.4	35.0	789.7	22.3	3.0
S05_1.2	FEED GAS COMPRESSOR GAS TURBINE Unit: S05 Scenario: 2	441684.1	7802181.4	35.0	812.1	67.0	3.0
S06_1.1	CO2 COMPRESSOR GAS TURBINE Unit: S06 Scenario: 1	441823.3	7802295.4	42.6	743.7	42.5	3.0
S06_1.2	CO2 COMPRESSOR GAS TURBINE Unit: S06 Scenario: 2	441823.3	7802295.4	42.6	770.4	39.1	3.0
S07_1.1	CO2 COMPRESSOR GAS TURBINE Unit: S07 Scenario: 1	441813.4	7802347.7	36.6	743.7	42.5	3.0
S07_1.2	CO2 COMPRESSOR GAS TURBINE Unit: S07 Scenario: 2	441813.4	7802347.7	36.6	770.4	39.1	3.0
S08_1.1	EMERGENCY DIESEL POWER GENERATOR PACKAGE Unit: S08 Scenario: 1	441451.9	7802245.8	10.3	777.6	42.2	0.5
S09_1.1	EMERGENCY DIESEL POWER GENERATOR PACKAGE Unit: S09 Scenario: 1	441449.7	7802253.0	10.3	777.6	42.2	0.5
S10_1.1	EMERGENCY DIESEL POWER GENERATOR PACKAGE Unit: S10 Scenario: 1	441448.2	7802261.2	10.3	777.6	42.2	0.5
S11_1.1	EMERGENCY DIESEL POWER GENERATOR PACKAGE Unit: S11 Scenario: 1	441446.3	7802268.8	10.3	777.6	42.2	0.5
S12_1.1	HEATING MEDIUM FIRED HEATER Unit: S12 Scenario: 1	441633.8	7802369.7	33.5	449.8	10.7	1.4
S13_1.1	HEATING MEDIUM FIRED HEATER Unit: S13 Scenario: 1	441643.9	7802371.3	33.5	449.8	10.7	1.4

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Model ID	Description[1]	UTM X (m, NAD83)	UTM Y (m, NAD83)	Stack Height (m)	Exit Temperature (K)	Velocity (m/s)	Diameter (m)
S14_1.1	HEATING MEDIUM FIRED HEATER Unit: S14 Scenario: 1	441611.1	7802365.1	33.5	449.8	10.7	1.4
S15_1.1	HEATING MEDIUM FIRED HEATER Unit: S15 Scenario: 1	441601.1	7802363.8	33.5	449.8	10.7	1.4
S16_1.1	HP FLARE Unit: S16 Scenario: 1	441450.1	7802640.3	43.9	394.3	6.0	0.7
S17_1.1	HP FLARE Unit: S17 Scenario: 1	441610.9	7802669.6	43.9	394.3	6.0	0.7
S18_1.1	LP FLARE Unit: S18 Scenario: 1	441576.0	7802460.5	22.0	394.3	6.0	0.5
S19_1.1	LP FLARE Unit: S19 Scenario: 1	441639.5	7802473.0	22.0	394.3	6.0	0.5
S20_1.1	FINE MIST PACKAGE - PUMP Unit: S20 Scenario: 1	441460.4	7802222.0	21.0	777.6	55.8	0.2
S21_1.1	FINE MIST PACKAGE - PUMP Unit: S21 Scenario: 1	441461.8	7802215.4	21.0	777.6	55.8	0.2
S22_1.1	FINE MIST PACKAGE - PUMP Unit: S22 Scenario: 1	441463.0	7802210.0	21.0	777.6	55.8	0.2
S23_1.1	FINE MIST PACKAGE - PUMP Unit: S23 Scenario: 1	441464.1	7802203.9	21.0	777.6	55.8	0.2
S24_1.1	OTHER EMERGENCY GENERATOR Unit: S24 Scenario: 1	441133.8	7802062.2	4.6	749.8	40.3	0.3
S25_1.1	OTHER EMERGENCY GENERATOR Unit: S25 Scenario: 1	441122.8	7802059.6	4.6	749.8	40.3	0.3
S26_1.1	OTHER EMERGENCY GENERATOR Unit: S26 Scenario: 1	441110.0	7802057.1	4.6	749.8	40.3	0.3
S27_1.1	Camp Standby Generator Unit: S27 Scenario: 1	440692.0	7803127.5	4.6	723.2	64.6	0.3
S28_1.1	Camp Standby Generator Unit: S28 Scenario: 1	440698.8	7803136.9	4.6	723.2	64.6	0.3
S29_1.1	Camp Standby Generator Unit: S29 Scenario: 1	440704.9	7803147.3	4.6	723.2	64.6	0.3

[1]Scenario numbers refer to the different load and ambient temperature parameters considered. Each scenario and unit combination have unique load and ambient temperature values.

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Appendix B.2: Scenario Summary and Emissions used in AERMOD Modeling

Model ID	Scenario [1]	Inlet Temp (°F)	Load (%)	Worst Case Emissions For Modeling					
				NO_2 1 hour (lb/hr)	NO_2 Annual (lb/hr)	CO 1 hr (lb/hr)	CO 8 hr (lb/hr)	PM^1 24 hour (lb/hr)	PM^1 Annual (lb/hr)
S01_1.1	1.1	20.0	100.0	28.8	28.8	18.4	17.7	2.1	2.1
S01_1.2	1.2	20.0	75.0	24.5	24.5	16.9	15.2	1.8	1.8
S01_1.3	1.3	20.0	66.0	25.9	25.9	17.4	16.0	1.6	1.6
S01_1.4	1.4	20.0	50.0	28.4	28.4	18.2	17.4	1.3	1.3
S01_1.5	1.5	20.0	0.0	12.6	6.0	16.8	14.8	0.2	0.2
S01_1.11	1.11	50.0	100.0	27.6	27.6	18.0	16.9	2.0	2.0
S01_1.12	1.12	50.0	75.0	22.6	22.6	16.3	14.1	1.6	1.6
S01_1.13	1.13	50.0	66.0	20.9	20.9	15.8	13.1	1.5	1.5
S01_1.14	1.14	50.0	50.0	19.0	18.0	14.8	11.4	1.3	1.3
S01_1.15	1.15	50.0	0.0	12.6	6.0	16.8	14.9	0.2	0.2
S01_1.6	1.6	80.0	100.0	24.8	24.8	17.1	15.4	1.8	1.8
S01_1.7	1.7	80.0	75.0	20.3	20.3	15.6	12.7	1.5	1.5
S01_1.8	1.8	80.0	66.0	19.5	19.0	15.2	12.0	1.4	1.4
S01_1.9	1.9	80.0	50.0	18.3	16.7	14.4	10.7	1.2	1.2
S01_1.10	1.1	80.0	0.0	12.6	6.0	16.8	15.0	0.2	0.2
S02_1.1	1.1	20.0	100.0	28.8	28.8	18.4	17.7	2.1	2.1
S02_1.2	1.2	20.0	75.0	24.5	24.5	16.9	15.2	1.8	1.8
S02_1.3	1.3	20.0	66.0	25.9	25.9	17.4	16.0	1.6	1.6
S02_1.4	1.4	20.0	50.0	28.4	28.4	18.2	17.4	1.3	1.3

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Model ID	Scenario [1]	Inlet Temp (°F)	Load (%)	Worst Case Emissions For Modeling					
				NO_2 1 hour (lb/hr)	NO_2 Annual (lb/hr)	CO 1 hr (lb/hr)	CO 8 hr (lb/hr)	PM^1 24 hour (lb/hr)	PM^1 Annual (lb/hr)
S02_1.5	1.5	20.0	0.0	12.6	6.0	16.8	14.8	0.2	0.2
S02_1.11	1.11	50.0	100.0	27.6	27.6	18.0	16.9	2.0	2.0
S02_1.12	1.12	50.0	75.0	22.6	22.6	16.3	14.1	1.6	1.6
S02_1.13	1.13	50.0	66.0	20.9	20.9	15.8	13.1	1.5	1.5
S02_1.14	1.14	50.0	50.0	19.0	18.0	14.8	11.4	1.3	1.3
S02_1.15	1.15	50.0	0.0	12.6	6.0	16.8	14.9	0.2	0.2
S02_1.6	1.6	80.0	100.0	24.8	24.8	17.1	15.4	1.8	1.8
S02_1.7	1.7	80.0	75.0	20.3	20.3	15.6	12.7	1.5	1.5
S02_1.8	1.8	80.0	66.0	19.5	19.0	15.2	12.0	1.4	1.4
S02_1.9	1.9	80.0	50.0	18.3	16.7	14.4	10.7	1.2	1.2
S02_1.10	1.1	80.0	0.0	12.6	6.0	16.8	15.0	0.2	0.2
S03_1.1	1.1	20.0	100.0	28.8	28.8	18.4	17.7	2.1	2.1
S03_1.2	1.2	20.0	75.0	24.5	24.5	16.9	15.2	1.8	1.8
S03_1.3	1.3	20.0	66.0	25.9	25.9	17.4	16.0	1.6	1.6
S03_1.4	1.4	20.0	50.0	28.4	28.4	18.2	17.4	1.3	1.3
S03_1.5	1.5	20.0	0.0	12.6	6.0	16.8	14.8	0.2	0.2
S03_1.11	1.11	50.0	100.0	27.6	27.6	18.0	16.9	2.0	2.0
S03_1.12	1.12	50.0	75.0	22.6	22.6	16.3	14.1	1.6	1.6
S03_1.13	1.13	50.0	66.0	20.9	20.9	15.8	13.1	1.5	1.5
S03_1.14	1.14	50.0	50.0	19.0	18.0	14.8	11.4	1.3	1.3

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Model ID	Scenario [1]	Inlet Temp (°F)	Load (%)	Worst Case Emissions For Modeling					
				NO_2 1 hour (lb/hr)	NO_2 Annual (lb/hr)	CO 1 hr (lb/hr)	CO 8 hr (lb/hr)	PM^1 24 hour (lb/hr)	PM^1 Annual (lb/hr)
S03_1.15	1.15	50.0	0.0	12.6	6.0	16.8	14.9	0.2	0.2
S03_1.6	1.6	80.0	100.0	24.8	24.8	17.1	15.4	1.8	1.8
S03_1.7	1.7	80.0	75.0	20.3	20.3	15.6	12.7	1.5	1.5
S03_1.8	1.8	80.0	66.0	19.5	19.0	15.2	12.0	1.4	1.4
S03_1.9	1.9	80.0	50.0	18.3	16.7	14.4	10.7	1.2	1.2
S03_1.10	1.1	80.0	0.0	12.6	6.0	16.8	15.0	0.2	0.2
S04_1.1	1.1	10.0	100.0	23.4	23.4	17.3	14.6	1.7	1.7
S04_1.2	1.2	80.0	100.0	20.3	20.3	16.3	12.9	0.03	0.01
S05_1.1	1.1	10.0	100.0	23.4	23.4	17.3	14.6	1.7	1.7
S05_1.2	1.2	80.0	100.0	20.3	20.3	16.3	12.9	0.03	0.01
S06_1.1	1.1	20.0	100.0	12.5	12.5	522.7	78.6	0.9	0.9
S06_1.2	1.2	80.0	100.0	11.3	10.8	521.7	76.8	0.02	0.01
S07_1.1	1.1	20.0	100.0	12.5	12.5	522.7	78.6	0.9	0.9
S07_1.2	1.2	80.0	100.0	11.3	10.8	521.7	76.8	0.02	0.01
S08_1.1	1.1	Ambient	100.0	0.3	0.3	24.1	3.0	0.01	0.01
S09_1.1	1.1	Ambient	100.0	0.3	0.3	24.1	3.0	0.01	0.01
S10_1.1	1.1	Ambient	100.0	0.3	0.3	24.1	3.0	0.01	0.01
S11_1.1	1.1	Ambient	100.0	0.3	0.3	24.1	3.0	0.01	0.01
S12_1.1	1.1	Ambient	100.0	9.1	9.1	4.8	4.8	0.6	0.6
S13_1.1	1.1	Ambient	100.0	9.1	9.1	4.8	4.8	0.6	0.6

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Model ID	Scenario [1]	Inlet Temp (°F)	Load (%)	Worst Case Emissions For Modeling					
				NO_2 1 hour (lb/hr)	NO_2 Annual (lb/hr)	CO 1 hr (lb/hr)	CO 8 hr (lb/hr)	PM[1] 24 hour (lb/hr)	PM[1] Annual (lb/hr)
S14_1.1	1.1	Ambient	100.0	9.1	9.1	4.8	4.8	0.6	0.6
S15_1.1	1.1	Ambient	100.0	9.1	9.1	4.8	4.8	0.6	0.6
S16_1.1	1.1	Ambient	100.0	0.5	0.5	0.2	0.2	0.01	0.01
S17_1.1	1.1	Ambient	100.0	0.5	0.5	0.2	0.2	0.01	0.01
S18_1.1	1.1	Ambient	100.0	0.1	0.1	0.1	0.1	0.01	0.01
S19_1.1	1.1	Ambient	100.0	0.1	0.1	0.1	0.1	0.01	0.01
S20_1.1	1.1	Ambient	100.0	<0.1	<0.1	3.9	0.5	0.01	0.01
S21_1.1	1.1	Ambient	100.0	<0.1	<0.1	3.9	0.5	0.01	0.01
S22_1.1	1.1	Ambient	100.0	<0.1	<0.1	3.9	0.5	0.01	0.01
S23_1.1	1.1	Ambient	100.0	<0.1	<0.1	3.9	0.5	0.01	0.01
S24_1.1	1.1	Ambient	100.0	0.1	0.1	9.6	1.2	0.01	0.01
S25_1.1	1.1	Ambient	100.0	0.1	0.1	9.6	1.2	0.01	0.01
S26_1.1	1.1	Ambient	100.0	0.1	0.1	9.6	1.2	0.01	0.01
S27_1.1	1.1	Ambient	100.0	0.2	0.2	13.0	1.6	0.01	0.01
S28_1.1	1.1	Ambient	100.0	0.2	0.2	13.0	1.6	0.01	0.01
S29_1.1	1.1	Ambient	100.0	0.2	0.2	13.0	1.6	0.01	0.01

[1]PM emissions are used for both $PM_{2.5}$ and PM_{10}

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ASAP

Alaska's In-State Gas Pipeline

ALASKA STAND ALONE PIPELINE/*ASAP*

Gas Conditioning Facility Final Modeling Report

008-14-910-014

November 2014

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REVISION HISTORY

Revision	Date	Comment	Approval	
			Company Preparing Report	AGDC

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/m^3	Micrograms per Cubic Meter
ADEC	Alaska Department of Environmental Conservation
AGDC	Alaska Gasline Development Corporation
ARM	ambient ratio method
ARM2	ambient ratio method 2
ASAP	Alaska Stand Alone Pipeline Project
CCP	Central Compression Plant
CO	Carbon Monoxide
ekW	electronic kilowatt
EPA	U.S. Environmental Protection Agency
GCF	Gas Conditioning Facility
GHG	Greenhouse Gasses
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid mist
ID	identification
km	kilometer
kW	kilowatt
NAAQS	National Ambient Air Quality Standards
NAD 83	North American Datum 1983

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NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
PM	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
SIL	Significant Impact Levels
SO_2	sulfur dioxide
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds

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CH2M HILL. 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL. December 19.

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EXECUTIVE SUMMARY

Dispersion modeling has been conducted for the Gas Conditioning Facility (GCF) based on information received by CH2M HILL through September 2014 from Arctic Solutions. Results indicate that the GCF as designed, will cause or contribute to a modeling exceedance for the annual NO_2 PSD increment unless some modification of the GCF as designed is made. Any additional changes to modeling assumptions would require U. S. EPA approval and there is no guarantee the modeling changes would result in concentrations below the annual NO_2 PSD increment. The purpose of this document is to describe the modeling and the results, and to present two options that, individually or in combination, will enable the GCF to demonstrate compliance with the annual NO_2 PSD increment. The modeling results and recommendations are presented in this summary.

LEGAL BASIS FOR MODELING

Dispersion modeling is required when submitting a permit application for a new facility with a potential to emit (PTE) of any regulated pollutant is greater than the Prevention of Significant Deterioration (PSD) threshold of 250 tons per year (tpy). Further, if the PTE for any regulated pollutant exceeds the PSD threshold, modeling is required for each pollutant with a PTE exceeding the significant emission rate (SER) for that pollutant. Table ES-1 shows the PTE for each pollutant compared to the PSD threshold and the SERs.

MODELING RESULTS

Table ES-2 summarizes the modeling results. Figure ES-1 shows the location of the modeled PSD Class II Increment exceedance.

RECOMMENDATIONS

The permit application must show that the GCF will not cause or contribute to the violation of any NAAQS or PSD increment. Because the facility as currently designed will exceed the PSD increment for annual NO_2, CH2M HILL has developed the following recommendations that will enable the GCF to comply with the modeling requirements:

1. Increase the GCF footprint either by placing gravel or a fence to encompass the area where violations could occur as shown in Figure ES-1.
2. Increase the stack height of the heaters from 120 feet to 140 feet.

CH2M HILL is requesting a decision from AGDC on which of the above mentioned recommendation is most feasible for the project and will be incorporated into the facility design to be included in the air quality permit application. An approval of the preferred path forward is required so that

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CH2M HILL can finalize the modeling for the PSD permit application to be submitted to ADEC in early 2015.

Table ES-1 PTE Compared to PSD Thresholds and Significant Emission Rates

POLLUTANT	PTE (tpy)	PSD THRESHOLD (tpy)	EXCEEDS PSD THRESHOLD?	SIGNIFICANT EMISSION RATE (tpy)	EXCEEDS SIGNIFICANT EMISSION RATE?
NO_x	802	250	Yes	40	Yes
CO	594	250	Yes	100	Yes
PM_{10}	53	250	No	15	Yes
$PM_{2.5}$	53	250	No	10	Yes
SO_2	5	250	No	40	No
VOC	173	250	No	40	Yes
H_2SO_4	0.6	--	--	7	No
H_2S	0.01	--	--	10	No
GHG [a]	1,000,000	100,000	Yes	0	Yes

Notes:

a. The PSD threshold for GHG only applies if another pollutant exceeds the PSD threshold.

-- : no threshold

tpy = tons per year

NO_x = oxides of nitrogen

CO = carbon monoxide

PM_{10} = particulate matter less than 10 microns in aerodynamic diameter

$PM_{2.5}$ = particulate matter less than 2.5 microns in aerodynamic diameter

SO_2 = sulfur dioxide

VOC = volatile organic compounds (as a precursor for ozone)

H_2SO_4 = sulfuric acid

H_2S = hydrogen sulfide

GHG = greenhouse gases

For volatile organic compounds (VOC), a qualitative analysis was conducted. No modeling is required for GHG.

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Table ES-2 Initial Modeling Results Compared to Thresholds

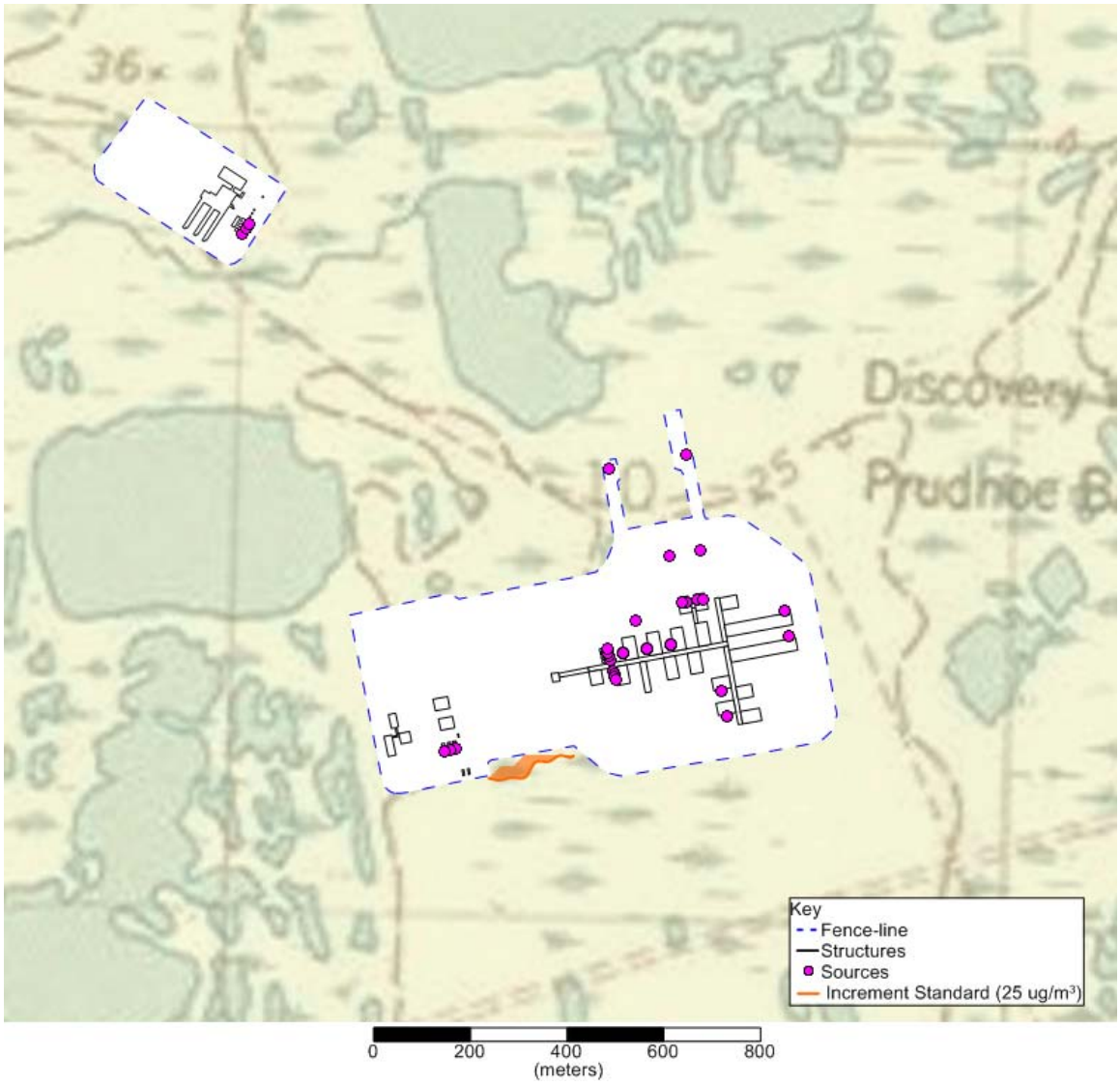
POLLUTANT	AVERAGING PERIOD	MODELED RESULTS FOR THE SIL (µg/m³)	SIL (µg/m³)	EXCEEDS THE SIL?	MODELED RESULTS FOR THE NAAQS (µg/m³)	NAAQS (µg/m³)	EXCEEDS THE NAAQS?	MODELED RESULTS FOR THE PSD CLASS II INCREMENT (µg/m³)	PSD CLASS II INCREMENT (µg/m³)	EXCEEDS THE PSD CLASS II INCREMENT?
PM_{10}	24-Hour	4.7	5	No	--	--	--	--	--	--
PM_{10}	Annual	0.44	1	No	--	--	--	6.9	17	No
$PM_{2.5}$	24-Hour	3.7	1.2	Yes	12.2	35	No	4.6	9	No
$PM_{2.5}$	Annual	0.92	0.3	Yes	3.8	12	No	0.44	4	No
CO	1-Hour	4,952	2,000	Yes	12,609	40,000	No	--	--	--
CO	8-Hour	214	500	No	--	--	--	--	--	--
NO_2	1-Hour	209.1	7.5	Yes	187.2	188	No	--	--	--
NO_2	Annual	4.6	1	Yes	25.6	100	No	25.6	25	Yes

Notes:
--: No threshold

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Figure ES-1 Annual NO_2 Increment Isopleth



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1. INTRODUCTION

AGDC has contracted with CH2M HILL to prepare an air permit application for the Gas Conditioning Facility (GCF) proposed for the North Slope as part of the Alaska Stand Alone Pipeline (ASAP) project. This report presents the dispersion modeling conducted using the information received through September 2014 from Arctic Solutions. It has been prepared for the following purposes:

- Evaluate proposed design of the GCF for air permitting
- Identify any changes in design which would be required by air quality regulations
- Identify any regulatory limit which would not be met by the design
- Identify potential solutions to any modeling non-compliance identified
- Seek approval from AGDC on the design change recommendations from AGDC

Dispersion modeling is required when submitting a permit application for a new facility whose potential to emit (PTE) of any regulated pollutant is greater than the Prevention of Significant Deterioration (PSD) threshold of 250 tons per year (tpy). Further, if the PTE for any regulated pollutant exceeds the PSD threshold, modeling is required for each pollutant whose PTE exceeds the significant emission rate (SER). The proposed GCF would be located in a federally-designated Class II area. Therefore, modeling results will be compared to National Ambient Air Quality Standards (NAAQS), PSD Class II Increments, significant impact levels (SILs), and preconstruction monitoring thresholds applicable to the proposed GCF.

Table 1 shows the PTE calculated for each pollutant emitted from the GCF compared to the PSD threshold and the SERs. Based on this result, dispersion modeling is required for the following pollutants: oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$). For volatile organic compounds (VOC), a qualitative analysis may be conducted instead of modeling and will be prepared for the permit application. For greenhouse gases (GHG), no NAAQS or PSD Class II Increment exists; therefore, no modeling is required.

In addition, Table 1 shows that NO_X emissions would exceed the significant $PM_{2.5}$ precursor emission levels. Therefore, secondary $PM_{2.5}$ impacts must be evaluated. This evaluation will be prepared for the permit application.

Finally, a Class I analysis is required because a PSD review is required. This analysis is included in this report.

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Table 1 PTE Compared to PSD and Significant Emission Thresholds

POLLUTANT	PTE (tpy)	PSD THRESHOLD (tpy)	EXCEEDS PSD THRESHOLD?	SER (tpy)	EXCEEDS SIGNIFICANT EMISSION RATE?
NO_x (by itself and as a pre-cursor for ozone and $PM_{2.5}$)	802	250	Yes	40	Yes
CO	594	250	Yes	100	Yes
PM_{10}	53	250	No	15	Yes
$PM_{2.5}$	53	250	No	10	Yes
SO_2	5	250	No	40	No
VOC (as a precursor for ozone)	173	250	No	40	Yes
H_2SO_4	0.6	--	--	7	No
H_2S	0.01	--	--	10	No
GHG [a]	1,000,000	100,000	Yes	0	Yes

Notes:

a. The PSD threshold for GHG only applies if another pollutant exceeds the PSD threshold.

-- : no threshold

tpy = tons per year

NO_x = oxides of nitrogen

CO = carbon monoxide

PM_{10} = particulate matter less than 10 microns in aerodynamic diameter

$PM_{2.5}$ = particulate matter less than 2.5 microns in aerodynamic diameter

SO_2 = sulfur dioxide

VOC = volatile organic compounds

H_2SO_4 = sulfuric acid

H_2S = hydrogen sulfide

GHG = greenhouse gases

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2. GCF CHARACTERIZATION

Dispersion models require information about the type and location of emission units, operating scenarios and source boundaries. This section describes these modeling inputs. Appendix A contains the source of information for each input.

2.1 EMISSION UNITS

All the proposed emission units at the GCF were modeled as point sources. Table 2 summarizes the point sources and the locations used for the dispersion modeling analysis.

Table 2 Emission Units

UNIT ID	DESCRIPTION	LOCATION	UTM EASTING (m, NAD83)[a]	UTM NORTHING (m, NAD83)
S01	Power Generation Turbine	GCF	441,578.60	7,802,277.60
S02	Power Generation Turbine	GCF	441,529.20	7,802,268.60
S03	Power Generation Turbine	GCF	441,478.20	7,802,259.40
S04	Feed Gas Compressor Turbine	GCF	441,693.70	7,802,130.90
S05	Feed Gas Compressor Turbine	GCF	441,684.11	7,802,181.40
S06	CO_2 Compressor Turbine	GCF	441,823.30	7,802,295.40
S07	CO_2 Compressor Turbine	GCF	441,813.40	7,802,347.70
S08	Emergency Diesel Generator	GCF	441,451.89	7,802,245.81
S09	Emergency Diesel Generator	GCF	441,449.70	7,802,253.02
S10	Emergency Diesel Generator	GCF	441,448.23	7,802,261.22
S11	Emergency Diesel Generator	GCF	441,446.26	7,8022,68.82
S12	Heater	GCF	441,633.80	7,802,369.70
S13	Heater	GCF	441,643.90	7,802,371.30
S14	Heater	GCF	441,611.10	7,802,365.10
S15	Heater	GCF	441,601.10	7,802,363.80
S16	High Pressure Flare	GCF	441,450.10	7,802,640.30
S17	High Pressure Flare	GCF	441,610.90	7,802,669.60
S18	Low Pressure Flare	GCF	441,576.00	7,802,460.50
S19	Low Pressure Flare	GCF	441,639.50	7,802,473.00
S20	Fire Pump Generator	GCF	441,460.42	7,802,222.00

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UNIT ID	DESCRIPTION	LOCATION	UTM EASTING (m, NAD83)[a]	UTM NORTHING (m, NAD83)
S21	Fire Pump Generator	GCF	441,461.76	7,802,215.39
S22	Fire Pump Generator	GCF	441,463.00	7,802,210.00
S23	Fire Pump Generator	GCF	441,464.11	7,802,203.93
S24	Emergency Generator (1,350 kW)	CAMP	441,133.82	7,802,062.20
S25	Emergency Generator (1,350 kW)	CAMP	441,122.75	7,802,059.64
S26	Emergency Generator (1,350 kW)	CAMP	441,109.97	7,802,057.09
S27	Emergency Generator (1,000 kW)	SUPPORT	440,691.97	7,803,127.51
S28	Emergency Generator (1,000 kW)	SUPPORT	440,698.81	7,803,136.88
S29	Emergency Generator (1,000 kW)	SUPPORT	440,704.89	7,803,147.27
S31	Nonroad Sources	GCF	441,506.39	7,802,326.38

Notes:

kW = kilowatt

m = meters

NAD 83 = North American Datum 1983

UTM = Universal Transverse Mercator

2.2 OPERATIONS

Normal operations of the GCF were used as the base case operating scenario for the dispersion modeling. Normal operations is described by emission unit below.

2.2.1 Combustion Turbines (S01 to S07)

It was assumed that the combustion turbines operate on treated gas only and that they would have electric inlet heaters (part of parasitic load and not an emissions source). Inlet temperatures for the power and feed gas turbines would be at a minimum of 10 degrees Fahrenheit (°F). Inlet temperatures for the CO_2 compressor turbines would be at a minimum of 20 degrees Fahrenheit (°F).

It was further assumed that the power turbines operate at varying loads while the feed gas and CO_2 compressor turbines operate at 100 percent load only. The modeling analysis included a load analysis to demonstrate that the anticipated range of loads and ambient temperature for the power turbines, CO_2 compressor turbines, and feed gas compressor turbines would not result in a modeled violation of the applicable standards. Capturing the worst-case combination of loads, including anticipated startup and shutdown scenarios, allows for maximum operating flexibility of the GCF. These scenarios assumed 10 startup and 10 shutdowns for yearly operations and two startups and one shutdown per day for short-term operations. Stack parameters associated with each of these loads and ambient conditions are summarized in the emission inventory submitted to AGDC on

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October 2, 2014. Table 3 summarizes the range of loads and ambient temperatures modeled for each turbine type. Appendix B provides the results of the load analyses.

Table 3 Turbine Operating Loads and Temperatures

TURBINES	LOADS	AMBIENT TEMPERATURES (°F)
Power Turbines	0, 50%, 66% 75% 100%	20, 50, 80
Feed Gas Turbines	100%	10, 80
Compressor Turbines	100%	20, 80

2.2.2 Process Heaters (S12 to S15)

Normal operations of the GCF assumed only three of the four treated gas-fired process heaters would operate at one time. The three heaters included in the ambient air modeling were identified by determining which three of the four heaters would result in the highest potential ground level concentration for each pollutant and averaging period modeled based on location. As shown in Tables 5, 6 and 7, for each pollutant averaging period, heaters identified as S13, S14, and S15 operating and heater S12 not operating resulted in the highest modeled concentrations. Appendix B provides the results of the analyses used to determine the heater operating configuration that results in the worst case modeled impacts.

2.2.3 Emergency Diesel-Fired Equipment (S8 to S11 and S20 to S29)

With the exception of emergencies, the emergency generator engines fueled by ultra low sulfur diesel operate for no more than 100 hours annually for testing and maintenance. Additionally, the operation of the units would be limited to 1 hour per day for maintenance and testing. Emissions used for the modeling are based on 500 hour annual operation as allowed by EPA.

2.2.4 Emergency Flares (S16 to S19)

The flares are for emergency use only. To keep the flares ready for emergencies, the pilot is operated continuously and purge gas moves continuously through the lines. Operation of the flares were modeled for pilot and purge gas firing only. Per discussions with ADEC, emergency flaring scenarios are not be included in the modeling analysis.

A burn pit is also proposed for the facility. The burn pit is part of the emergency flaring scenario. However, it does not contain a pilot, nor do purge gases have to be used. As with the flares, and in agreement with ADEC, emergency use at the burn pit is not required to be part of the modeling analysis and is not included.

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2.2.5 Nonroad Sources (S31)

Table 4 presents nonroad sources modeled. These sources will be operated with ultra low sulfur diesel fuel. The nonroad sources were modeled as a pseudo point source at a central location on the GCF pad.

Table 4 Nonroad Sources

EQUIPMENT	QUANTITY	SIZE (BHP)
966 Loader	1	286
Skid Steer	1	94
185 CFM Air Compressor	1	49
Light Plants	2	14
Mobile Generator (50 kW)	1	68
Genie High Reach Telehandler	1	124

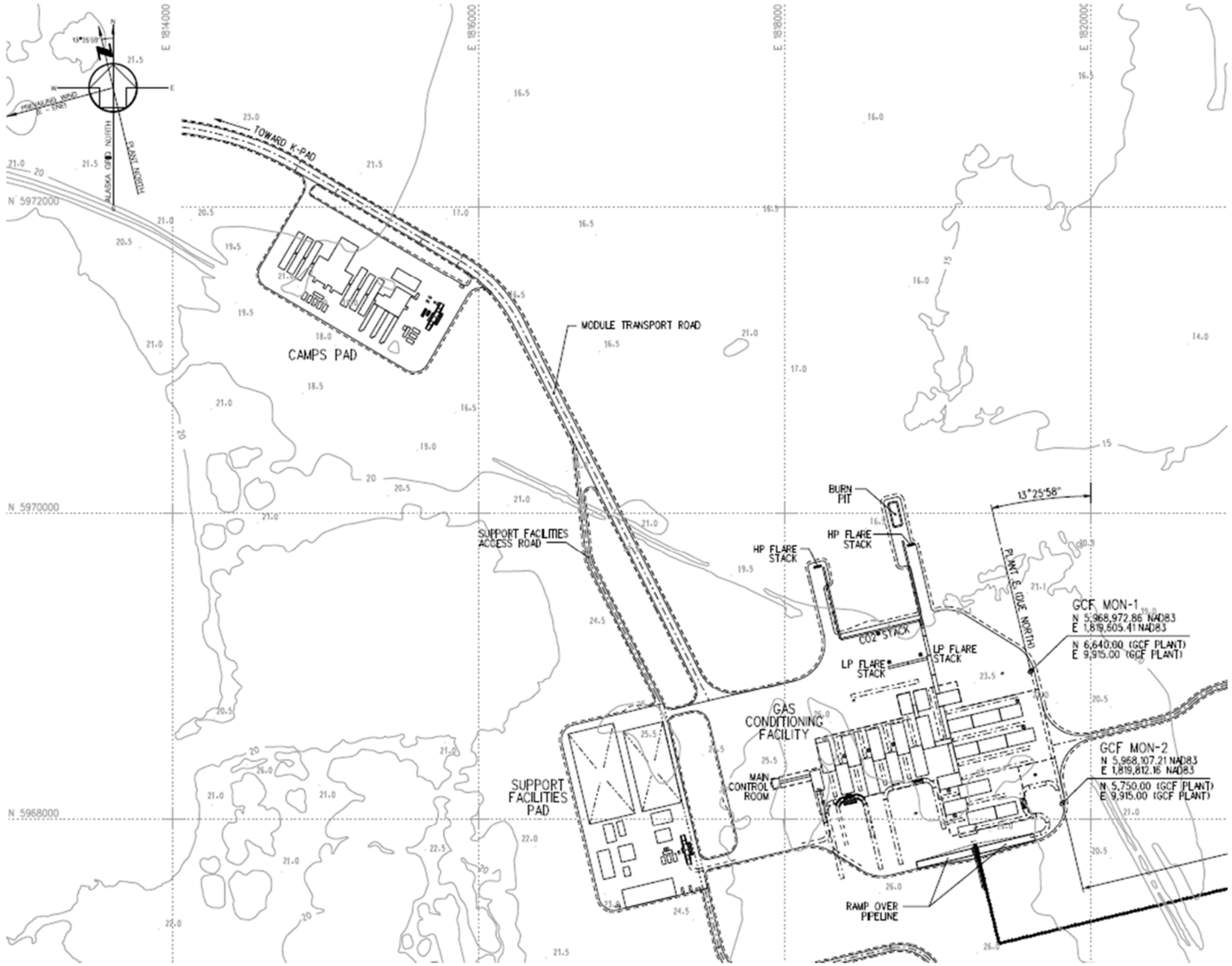
2.3 GCF LAYOUT AND SOURCE LOCATIONS

The emission units are located on three separate pads: the GCF pad, the support pad and the camp pad. Consistent with other modeling analyses on the North Slope (ADEC, 2013), the workcamp would not be considered ambient air since the workers housed at the camp to support the GCF operations would be on-call for 24-hours or working in shifts. Ambient air is considered to be outside of these three pads. The preliminary site layout as provided by Arctic Solutions is shown in Figure 1. The layout showing emission unit locations and AERMOD model layout is provided in Figure 2.

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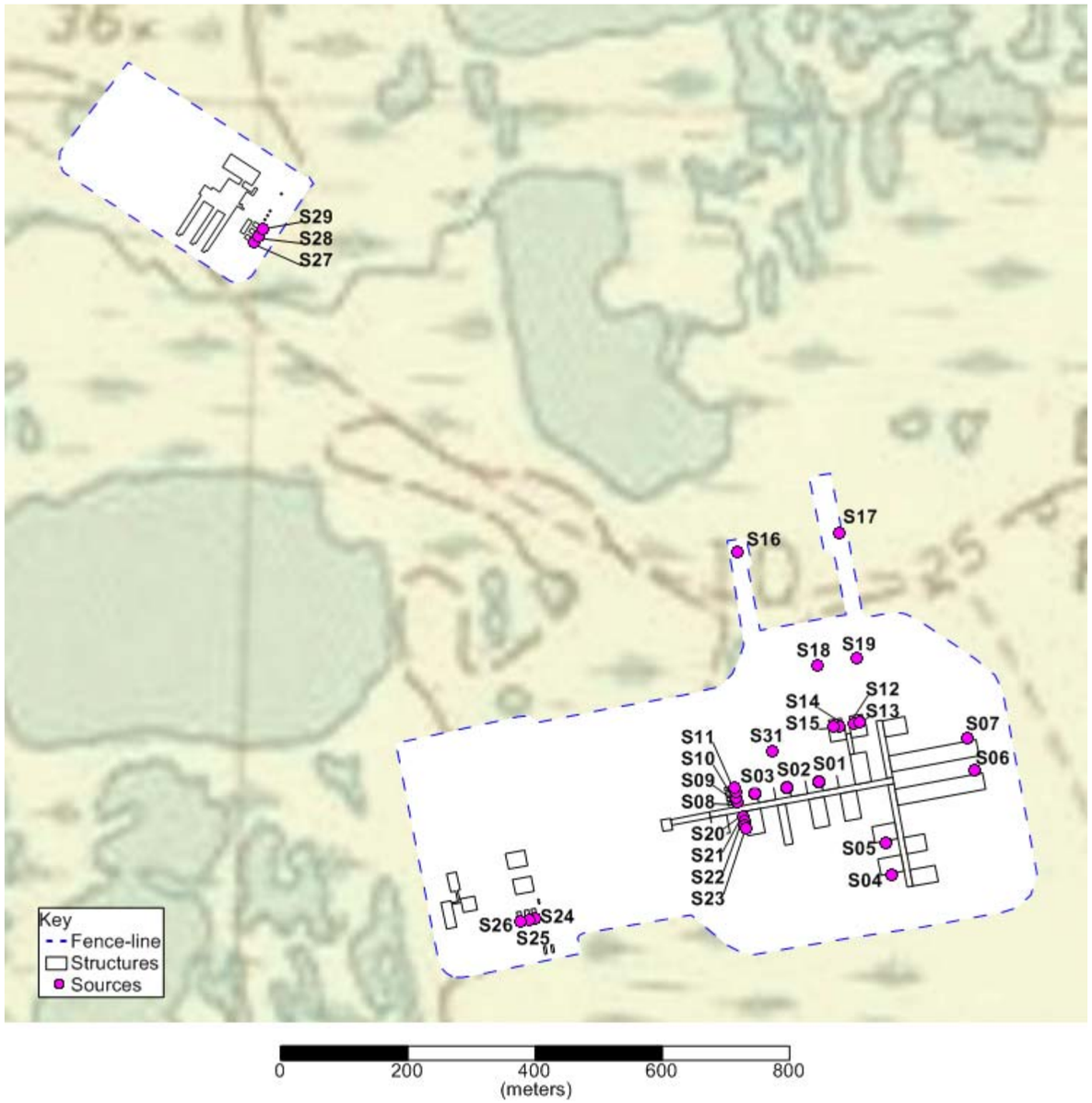
Figure 1. Site Layout



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Figure 2. AERMOD Site Layout



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3. MODELING PARAMETERS

3.1 MODEL SELECTION

The American Meteorological Society (AMS) and the EPA regulatory model improvement committee's (AERMIC's) most recent version of their regulatory dispersion model (AERMIC and EPA regulatory model, AERMOD, Version 14134) was used to evaluate the ambient air quality impacts from the GCF. The AERMOD model is the currently recommended by EPA for predicting short-term impacts from industrial-point sources, as well as area and volume sources.

3.1.1 Model Options

The AERMOD model uses regulatory default options as recommended in the EPA's *Guideline on Air Quality Models* (EPA, 2005), with the exception of the FLAT terrain option. The FLAT terrain option will be used based on the void of complex terrain in the region and based on conversations with ADEC[1]. The building profile input program with plume rise model enhancement (BPIP-Prime Version 04274), a supporting preprocessing program for AERMOD, will also be used.

AERMOD will not use the urban option since land use within 3 km of the GCF is primarily classified as rural.

3.2 METEOROLOGY

Meteorological data collected at the PAD A monitoring station in Prudhoe Bay, Alaska will be used. The meteorological data for this analysis have been compiled by ADEC specifically for use in dispersion modeling analyses and includes data from January 1, 2007 to December 31, 2011.

The PAD A data set was deemed representative of the GCF site based on the following factors:

- The monitoring site is 9.5 km from the GCF.
- There are no complex terrain features between PAD A and the GCF.
- The land uses surrounding the monitoring site and the GCF are similar (both are surrounded by arctic tundra).
- 5-years of hourly meteorological data were measured at PAD A.

[1] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

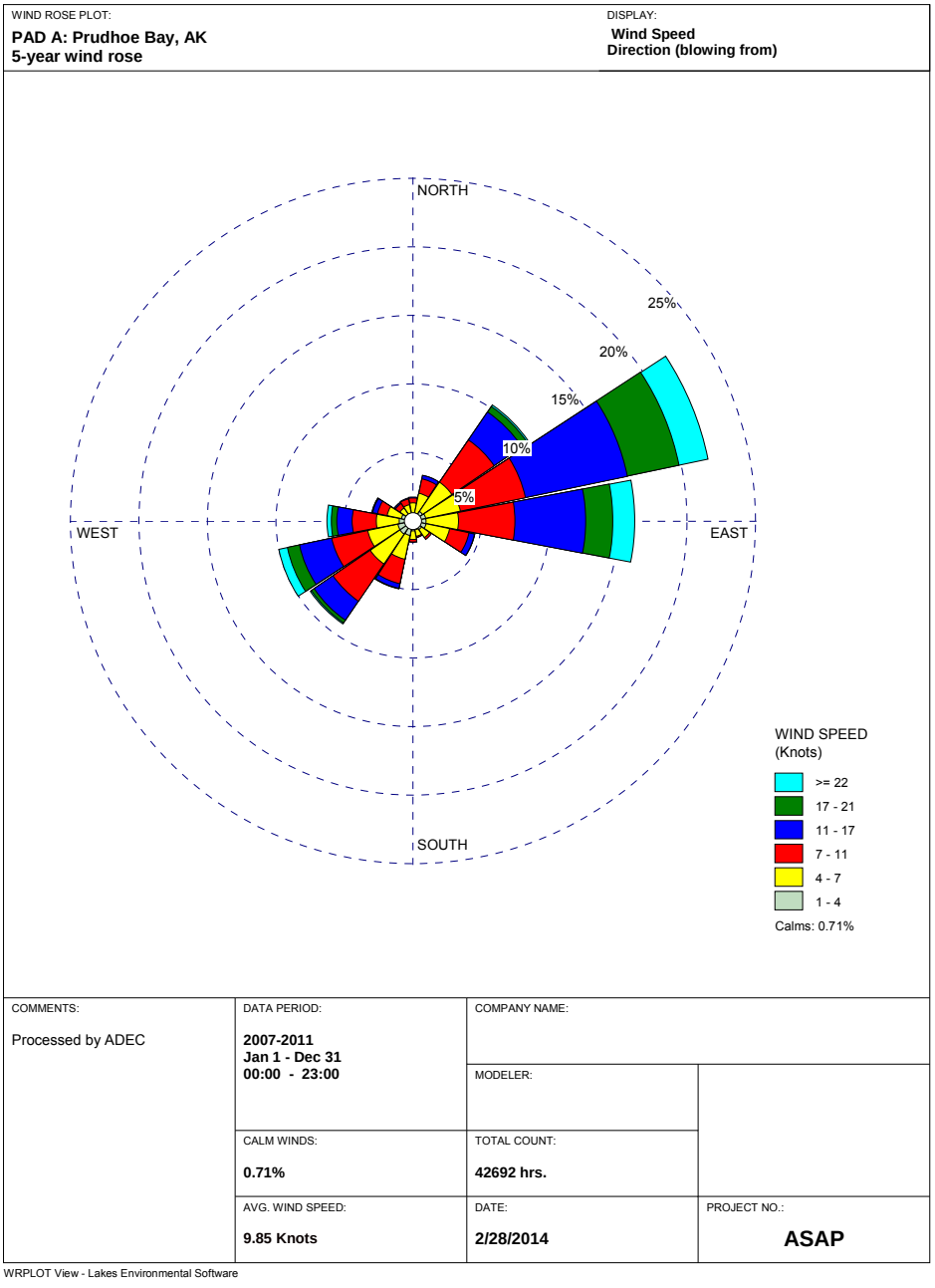
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Therefore, the PAD A monitoring station is considered representative of the GCF, and the meteorological data collected at the monitoring station will be used to model the ambient air quality impacts.

A wind rose for the five years of wind data from the monitoring station is presented in Figure 3.

Figure 3. PAD A Wind Rose



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3.3 NO_X TO NO_2 CHARACTERIZATION

The EPA allows for a tiered approach to characterize the conversion of total NO_x emitted to downwind concentrations of NO_2. Tier 1 conservatively assumes 100 percent of predicted NO_x concentrations would convert to NO_2. The EPA Tier 2 approach assumes a default ambient ratio of 0.8 to characterize the conversion of 1-hour NO_2 concentrations, while an ambient ratio of 0.75 is used for annual concentrations. Additionally, the EPA has released a second beta Tier 2 Ambient Ratio Method 2 (ARM2), which is based on an evaluation of the ratios of NO_2/NO_x from the EPA's Air Quality System record of ambient air quality data. Both the Tier 1 and ARM Tier 2 NO_2 characterization techniques are allowed by ADEC without additional agency consultation or approval (EPA, 2005). The ARM2 beta method requires additional ADEC approval.

The background 1-hour NO_2 concentration for the area is 73% of the standard (see section 5), therefore, an hour of day background profile would reduce the likelihood of the maximum modeled impacts and the maximum hourly concentrations being summed and resulting in an overly conservative impact. The 98th percentile hour of day 1-hour NO_2 profile for the three most recent years of monitored data are provided in Table 5 along with the three-year average that is used in the modeling.

Table 5 The 98th Percentile Hour of Day 1-hour NO_2 Profile

HOUR OF DAY	2010		2011		2012		3 YEAR AVERAGE	
	ppb	(µg/m³)	ppb	(µg/m³)	ppb	(µg/m³)	Ppb	(µg/m³)
1	66	123	59	110	43	80	56	104
2	64	120	56	105	45	84	55	103
3	68	127	59	110	46	86	58	108
4	71	133	65	122	45	84	60	113
5	67	125	64	120	42	79	58	108
6	68	127	59	110	47	88	58	108
7	66	123	61	114	39	73	55	103
8	65	122	53	99	40	75	53	99
9	70	131	56	105	44	82	57	106
10	67	125	58	109	38	71	54	102
11	67	125	59	110	43	80	57	105
12	67	125	53	99	41	77	54	100
13	70	131	51	95	35	65	52	97
14	67	125	63	118	44	82	58	108
15	65	122	57	107	41	77	55	102
16	73	137	64	120	47	88	62	115
17	68	127	58	109	49	92	59	109

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HOUR OF DAY	2010		2011		2012		3 YEAR AVERAGE	
	ppb	(µg/m³)	ppb	(µg/m³)	ppb	(µg/m³)	Ppb	(µg/m³)
18	67	125	55	103	49	92	57	107
19	65	122	52	97	48	90	55	103
20	64	120	55	103	48	90	56	104
21	63	118	57	107	49	92	57	106
22	64	120	54	101	52	97	57	106
23	68	127	52	97	50	94	57	106
24	67	125	55	103	50	94	57	107

The Tier 3 approach, which was not used for this analysis, allows for an alternate method of characterizing the conversion of total NO_x to NO_2 concentrations. However, any alternate method proposed as Tier 3 would require agency consultation and approval before submitting a modeling analysis to ADEC. Alternate methods include the Ozone Limiting Method and the Plume Volume Molar Ration Method. These are generally accepted but require specific model input about the sources, hourly ambient concentrations of ozone, and hourly ambient concentrations of NO_x and NO_2. Additionally, ADEC and EPA would be required to approve the Tier 3 method.

The default Tier 2 ambient ratios were applied to characterize the modeled 1-hour and annual NO_2 concentrations from the GCF, which resulted in modeled concentrations which would exceed the annual increment. These results are presented in Section 5.

3.4 RECEPTOR NETWORK

Receptors are selected for the locations where concentrations of ambient pollutants are calculated in the model. Property boundary receptors were placed at 25-meter intervals. Beyond the ASAP's property boundary, receptor spacing was as follows:

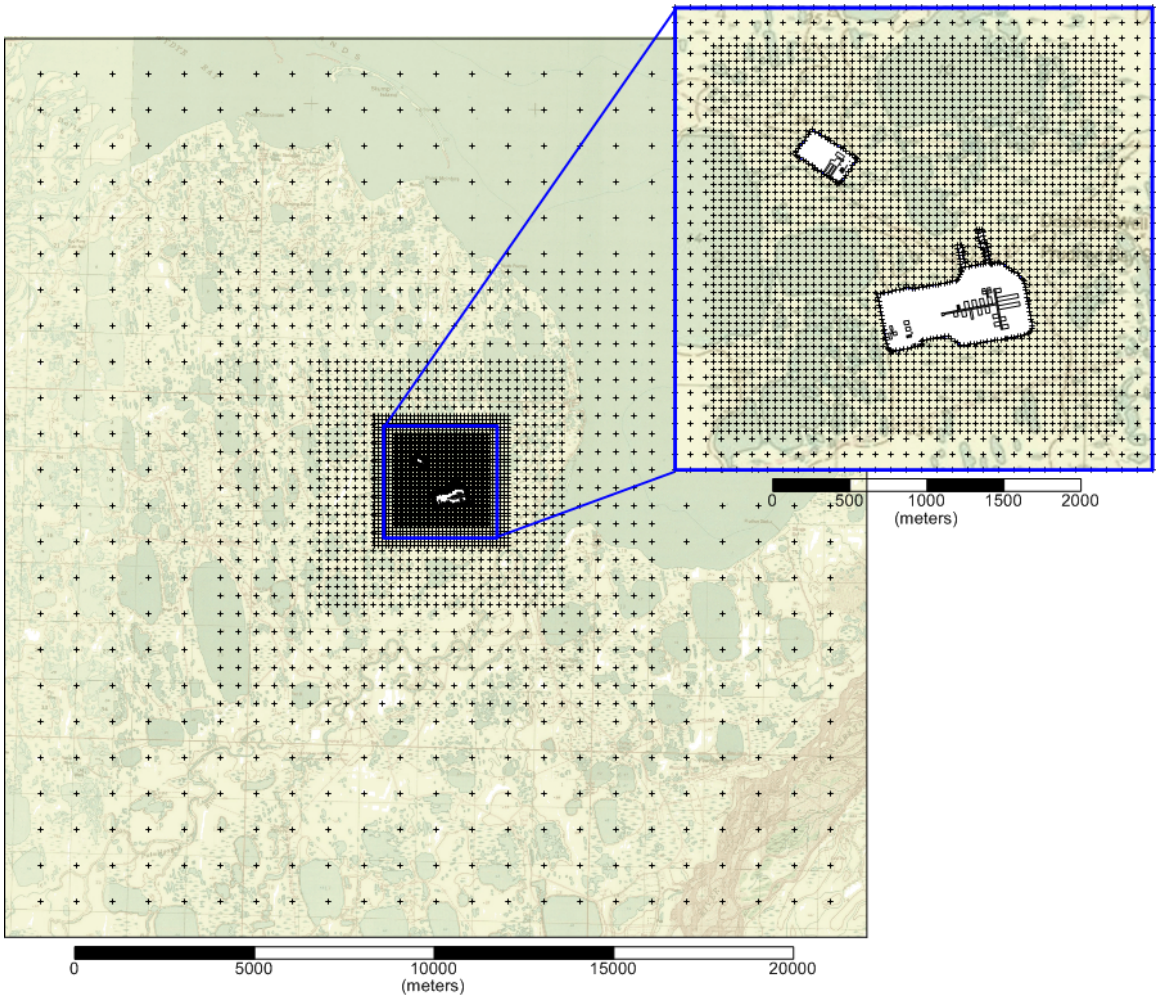
- 50-meter spacing from the property boundary to 500 meters
- 100-meter spacing from beyond 500 meters to 1 km
- 250-meter spacing from beyond 1 km to 2.5 km
- 500-meter spacing from beyond 2.5 km to 5 km
- 1,000-meter spacing from beyond 5 km to 10 km

Figure 4 shows the base receptor grid. All receptors and source locations were expressed in the UTM NAD 83, Zone 6 coordinate system.

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Figure 4. Receptor Network



3.5 BACKGROUND CONCENTRATIONS

The neighboring CCP, owned by British Petroleum, operates an ambient monitoring station. The CCP is located less than one mile east of the proposed GCF site. Ambient air data for NO_2, $PM_{2.5}$, and PM_{10} have been collected at the CCP. Monitoring data is available for NO_2 for 5 years and for $PM_{2.5}$ and PM_{10} for the year 2012. The CCP recently installed a CO monitor; however, a full year of hourly data is not yet available. Therefore, the Fairbanks, Alaska monitoring station was used for background CO concentrations. The Fairbanks area is designated as maintenance for CO (previously CO concentrations in the area were above the NAAQS and currently should be higher than the concentrations in the Prudhoe Bay area). Therefore, it is expected the concentrations monitored in the Fairbanks area would be conservative compared to conditions at Prudhoe Bay.

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A summary of the monitored concentrations of criteria pollutants from 2008 to 2012 is provided in Table 5. The background concentrations used for the 1-hr NO_2 modeling are described in detail in Section 3.3.

Preliminary discussions with ADEC[2] have indicated that the background concentrations provided in Table 5 would be representative of the conditions at the proposed GCF site. Additionally, the ambient air monitoring at the site for NO_2, $PM_{2.5}$, PM_{10}, and CO (when complete) would satisfy any preconstruction monitoring requirements under 18 Alaska Administrative Code 50.040(h)(11).

The PSD baseline date for NO_2 is 1988. In a typical increment modeling analysis, emission sources constructed since the baseline date would need to be modeled along with the proposed project to demonstrate compliance. However, in this analysis, the monitored background concentrations at the CCP were representative of the existing increment consumption on the North Slope. This is because it was conservatively assumed that all increment consuming emission sources' impacts and the natural background concentrations are included in the data.

The PSD baseline date for $PM_{2.5}$ is November 2012. It is assumed for this analysis that the GCF would be the only increment consuming source near the GCF. Therefore, background and competing source concentrations would not be added to the model design value for comparison to the $PM_{2.5}$ increment standards.

[2] December 19, 2013. Meeting between Alan Schuler/ADEC, Louise Brown/CH2M HILL, Don Caniparoli/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

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POLLUTANT	AVERAGING TIME	2008		2009		2010		2011		2012		MAXIMUM
		ppm	µg/m³	ppm	µg/m³	ppm	µg/m³	Ppm	µg/m³	ppm	µg/m³	µg/m³
NO_2	1-hour (Max)	0.103	193	0.096	179	0.110	205	0.094	169	0.104	195	205
NO_2	1-hour (98th Percentile)	0.084	157	0.077	143	0.083	155	0.079	147	0.062	115	139[a]
NO_2	Annual[b]	0.010	18	0.010	18	0.011	21	0.009	17	0.006	11.0	21.0
CO[c]	8-hour	3.2	3,606	3.2	3,603	4.1	4,620	4.1	4,620	3.6	4,056	4,620
CO[c]	1-hour	5.3	6,057	5.3	6,057	6.4	7,314	6.4	7,314	6.7	7,657	7,657
PM_{10}	24-hour (Max.)	—	N/A	—	N/A	—	N/A	—	33.2	—	27.3	33.2
PM_{10}	24-hour (H2H)	—	N/A	—	N/A	—	N/A	—	26.2	—	20.0	26.2
PM_{10}	Annual[b]	—	N/A	—	N/A	—	N/A	—	6.5	—	5.5	6.5
$PM_{2.5}$	24-hour (Max.)	—	N/A	—	N/A	—	N/A	—	10.1	—	10.0	10.1
$PM_{2.5}$	24-hour (98th Percentile)	—	N/A	—	N/A	—	N/A	—	8.8	—	7.1	8.8
$PM_{2.5}$	Annual[b]	—	N/A	—	N/A	—	N/A	—	3.2	—	2.6	2.9[d]

Notes:
a. Average of the last three years
b. Annual Arithmetic Mean
c. from Fairbanks
d. Average of two years of available data

N/A = Not Applicable (i.e., data not available)

Max: maximum
H2H: high-2nd-high

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4. MODELING RESULTS

The following summarizes the results from the AERMOD modeling completed for the current design of the GCF during normal operations.

4.1 GCF SIL AND MONITORING THRESHOLDS ANALYSIS

For the current proposed design of the GCF, maximum predicted concentrations by AERMOD, for each pollutant and averaging period are summarized in Table 7. The results are compared to both the SIL and preconstruction monitoring thresholds for each pollutant and averaging time.

Table 7 GCF-Predicted Impacts Compared to SIL and Preconstruction Monitoring Thresholds for Proposed Design

POLLUTANT	AVERAGING PERIOD	MAXIMUM MODELED CONCENTRATION (µg/m³)	SIL (µg/m³)	EXCEEDS?	PRECONSTRUCTION MONITORING THRESHOLD (µg/m³)	EXCEEDS ?
PM_{10}	24-Hour	4.7	5	No	10	No
PM_{10}	Annual	0.44	1	No	--	--
$PM_{2.5}$	24-Hour	3.7[a]	1.2	Yes	0	Yes*
$PM_{2.5}$	Annual	0.92[a]	0.3	Yes	--	--
CO	1-Hour	4,952	2,000	Yes	--	--
CO	8-Hour	214	500	No	575	No
NO_2	1-Hour	209.1[b]	7.5	Yes	--	--
NO_2	Annual	4.6[a,c]	1	Yes	14	No

Notes:

[a] Value represents the highest of the 5-year averages of the maximum modeled concentration predicted each year

[b] Ambient ratio of 0.8 used to convert 1-hour NO_x to NO_2

[c] Ambient ratio of 0.75 used to convert annual NO_x to NO_2

--: No threshold

*Based on discussions with ADEC, the ambient air quality data collected at the neighboring CCP facility would satisfy the $PM_{2.5}$ preconstruction monitoring requirement for the GCF. Therefore, no further requirements for preconstruction monitoring for the GCF would be required.

The GCF would not exceed the SIL for 24-hour PM_{10}, annual PM_{10} and 8-hour CO. Therefore, the GCF would not cause or significantly contribute to a violation of these NAAQS or PSD Class II Increments and no further modeling is required for these pollutants and averaging periods.

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The GCF would exceed the SIL for all other pollutants and averaging times. Therefore, an analysis of the GCF impacts in comparison to the NAAQS and increments was conducted and the results are summarized in the following sections.

4.2 NAAQS ANALYSIS

To compare the modeling results to the NAAQS for the pollutants and averaging times that exceeded the SIL, the maximum modeled concentration was added to the background concentration. The contributions from competing nearby sources and general background concentrations were considered to be included in the CCP monitored data or conservatively captured in the Fairbanks CO monitored data. This is based on previous conversations with ADEC[3] and the conservative CO background from the Fairbanks maintenance area. AERMOD modeled results and a comparison to the NAAQS for each pollutant and averaging times are summarized in Table 8.

Table 8 AERMOD Modeled Results in Comparison to the NAAQS for the Proposed Design

POLLUTANT	AVERAGING PERIOD	MODELED CONCENTRATION (µg/m³)	BACKGROUND CONCENTRATION (µg/m³)	TOTAL CONCENTRATION (µg/m³)	NAAQS (µg/m³)
$PM_{2.5}$	24-Hour	3.4[a]	8.8	12.2	35
$PM_{2.5}$	Annual	0.92[b]	2.9	3.8	12
CO	1-Hour	4,952[b]	7,657	12,609	40,000
NO_2	1-Hour	187.2[c]	Included[g]	187.2	188
NO_2	Annual	4.6[d]	21	25.6	100

Notes:
a. Highest-2nd-high of the 5-modeled years
b. Value represents the highest of the 5-year averages of the maximum modeled concentration predicted each year
c. Ambient ratio of 0.8 used to convert 1-hour NO_x to NO_2
d. Highest annual concentration
e. Ambient ratio of 0.75 used to convert annual NO_x to NO_2
g. Background concentrations for NO_2 are described in Section 3.3
-- : no standard

For all pollutants and averaging times, the GCF as currently designed would not cause a modeled violation of the NAAQS for which the area is classified as either attainment or unclassified. However, it should be noted that the 1-hour NO_2 concentration would be approximately 99% of the

[3] December 19, 2013. Meeting between Alan Schuler/ADEC, Don Caniparoli/CH2M HILL, Louise Brown/CH2M HILL, John Frohning/CH2M HILL, and Carrie MacDougall/CH2M HILL.

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standard. Therefore, if any changes to project design occur, they could affect the 1-hr NO_2 modeling results.

4.3 INCREMENT ANALYSIS

Table 9 summarizes the GCF modeled impacts compared to the PSD Class II Increment standards.

Table 9 AERMOD Modeled Results in Comparison to PSD Class II Increments for the Proposed Design

POLLUTANT	AVERAGING PERIOD	MODELED CONCENTRATION (µg/m³)	BACKGROUND CONCENTRATION (µg/m³)	TOTAL CONCENTRATION (µg/m³)	PSD CLASS II INCREMENTS (µg/m³)
PM_{10}	Annual	0.44	6.5	6.9	17
$PM_{2.5}$	24-Hour	4.6[a]	N/A	4.6	9
$PM_{2.5}$	Annual	0.44	N/A	0.44	4
NO_2	Annual	4.5	21	25.6	25

Notes:
a. Highest-2nd-high of the 5-modeled years
b. Ambient ratio of 0.75 used to convert annual NO_x to NO_2
N/A – not applicable

The modeled results presented in Table 8 demonstrate that modeled concentrations from the GCF as currently designed would be above the annual NO_2 increment, but below the 24-hour $PM_{2.5}$, annual PM_{10}, and annual $PM_{2.5}$ increment.

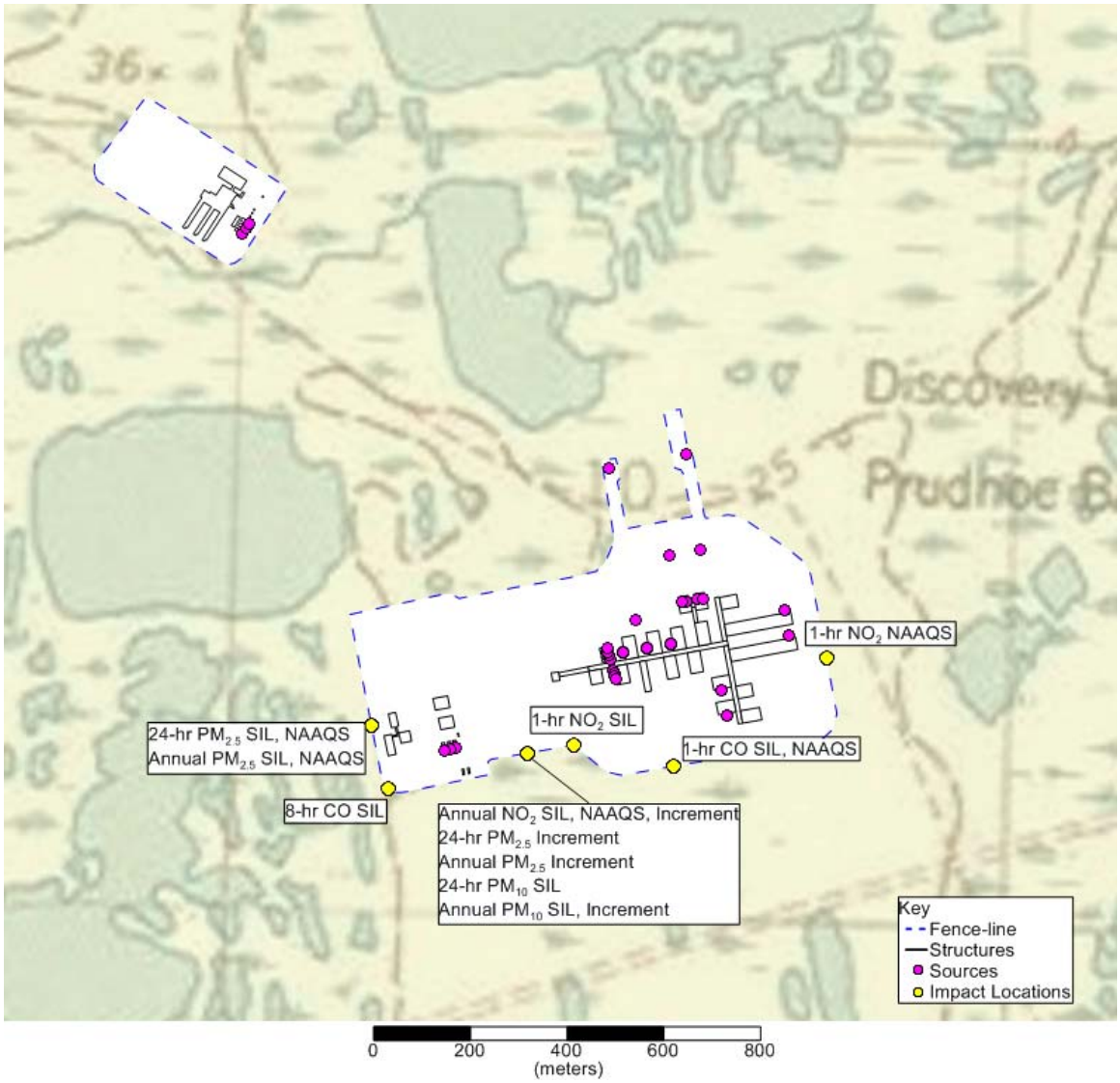
4.4 LOCATIONS OF IMPACTS

The maximum impact location for the GCF impacts are shown on Figure 5.

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Figure 5. Maximum Impact Locations



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5. CLASS I ANALYSIS

A Class I analysis would be required for pollutants triggering PSD review at Class I areas near the GCF. The proposed GCF would be located approximately 711 km from Denali National Park. This is the nearest federally-designated Class I area to the project site. Denali National Park is further than 300 km from the project site, which initially would act as a screening threshold for Class I increments and Class I air quality related values (AQRVs) analysis (ADEC, 2013b).

Although not required for this analysis since the GCF is greater than 300-km from Denali National Park, the Federal Land Managers allow an emissions/distance (Q/D) factor of 10 to be used to screen out from AQRV review sources located greater than 50 km from a Class I area (National Park Service, U.S. Department of the Interior, 2010). This screening criterion applies to all AQRVs such that where Q/D is 10 or less for a given Class I area, no further AQRV review is required for that area. For purposes of applying the Q/D screening criterion, emissions are calculated as the maximum daily normal operations scenario total of SO_2, NO_x, PM_{10}, and H_2SO_4 on an annual emissions basis (in tpy). These emissions are then divided by the distance (in km) from the Class I area.

The proposed GCF total of SO_2, NO_x, PM_{10}, and H_2SO_4 emissions would be approximately 890 tpy. This includes 24-hr operations of the turbines and heaters with 1-hr per day operations of the emergency generators for testing and maintenance. These preliminary emissions result in a Q/D for Denali National Park of 1.3. This is less than the Federal Land Managers recommended screening threshold of 10; therefore, the proposed GCF would be considered to have a less than significant impact on Denali National Park.

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6. RECOMMENDATIONS

The permit application must show that the GCF will not cause or contribute to the violation of any NAAQS or PSD increment. Because the facility as currently designed will exceed the PSD increment for annual NO_2, CH2M HILL has developed the following design alternatives that will enable the GCF to meet this requirement.

1. Increase the GCF footprint by extending the gravel pad or fence placement.
2. Increase the heater stack height from 120 feet to 140 feet.

CH2M HILL is requesting a decision from AGDC on which of the above mentioned recommendation is most feasible for the project and be incorporated into the facility design included in the air quality permit application. An approval of the preferred path forward is required so that CH2M HILL can finalize the modeling for the PSD permit application to be submitted to ADEC in February 2015.

6.1 INCREASE THE GCF FOOTPRINT

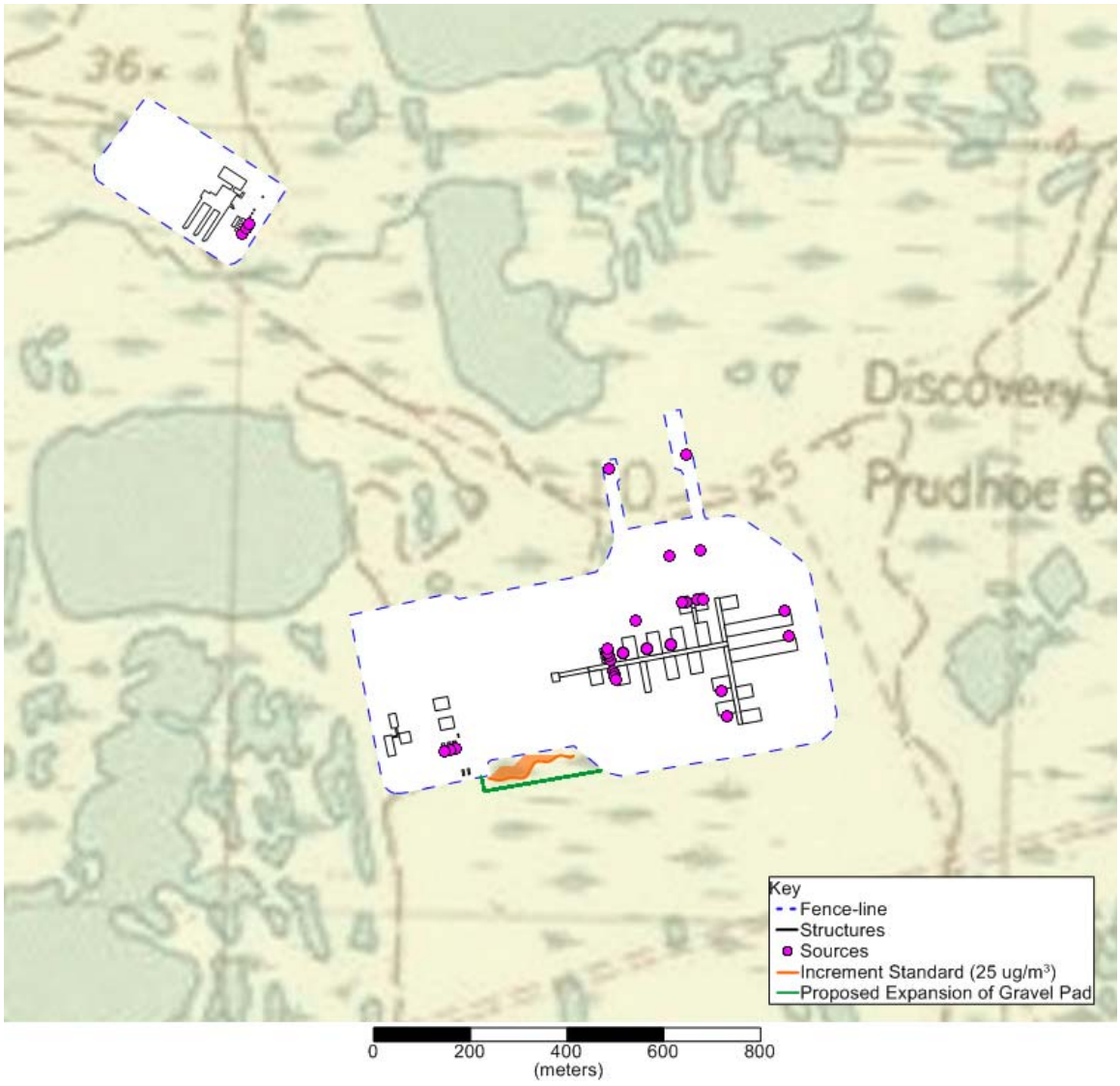
Increasing the facility footprint and /or fenceline could effectively remove the current modeled exceedances of the annual NO_2 increment because areas within the facility are excluded from the modeling analysis. Based on the modeling described previously, the distance to extend the fenceline would be approximately 50 meters south for a portion of the boundary to ensure all receptors in the preliminary modeling above the annual increment are encapsulated. Figure 6 shows the extension of the boundary.

The area is approximately 22,500 square meters (26,910 square yards). Rough order of magnitude gravel pad costs from Michael Baker Junior Engineers is $5.17 per square foot for a depth of 5 feet. The pad does not need to be 5 feet deep in this area to establish the GCF footprint for modeling purposes. However, assuming a maximum area with 5 foot gravel pad, the maximum cost for extending the gravel pad would be $1,252,122. Fencing costs were not readily available but anticipated to be less than a 5 foot deep gravel pad. Therefore, this alternative would be less than $1,252,122.

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Figure 6. Increase in the GCF Footprint



6.2 RAISE THE HEIGHT OF THE PROCESS HEATER STACKS

Raising the height of the process heater stacks would allow for more dilution of the plume as it travels offsite. Since the preliminary modeled concentrations are above the annual NO_2 increment, an increase in plume dilution would be expected reduce the modeled concentrations from the heaters closer to the standards.

A stack height sensitivity analysis was conducted for the three heaters (S13, S14, and S15) modeled. The heater stacks were raised in 10-foot intervals and the results from the analysis are summarized in Table 10.

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Table 10 Annual Increment NO_2 Heater Test Case Descriptions and Results

TEST CASE DESCRIPTION	MODELED CONCENTRATION (µg/m³)[a]	BACKGROUND CONCENTRATION (µg/m³)	TOTAL CONCENTRATION (µg/m³)	PSD CLASS II INCREMENTS (µg/m³)
Stack Height at 120 feet	4.4	21	25.4	25
Stack Height at 130 feet	4.2	21	25.2	25
Stack Height at 140 feet	3.9	21	24.9	25

Notes:
a. Ambient ratio of 0.75 used to convert annual NO_x to NO_2

The results demonstrate that if the heater stacks are raised to 140-feet above ground level or higher, the modeled concentration in comparison to the annual NO_2 increment would be below the standard. However, the stack height could be increased by another 10 feet to further reduce impacts from the source.

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Appendix A
Sources of Modeling Inputs

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MODELING ID	DESCRIPTION	DATA PROVIDED BY ARCTIC SOLUTIONS	DATA PROVIDED BY VENDORS	ASSUMPTIONS PROVIDED BY CH2M HILL
S01-S03	Gas Power Generation Turbines	• Stack locations • Building location • Updated indicative manufacturer and model number • Number of equipment • Operation type (i.e., simple cycle) • Fuel type • Fuel higher and lower heating values • Control device • Operation time • Stack parameters • Updated stack height • 10 startups and 10 shutdowns per year.	• Emission profiles • Fuel flow • Exhaust characteristics • Inlet air temperature requirement	• 2 startups and 1 shutdown per day • Operation on treated gas only • Power turbine annual PTE is based on the worst-case scenario at 20°F between Case 1: all three turbines operating at 66% or Case 2: two turbines operating at 100%, and one turbine operating at 0% • SO_2, H_2SO_4, and condensable PM emissions based on mass balance of the sulfur in the fuel • Contingency factor applied to startup and shutdown emissions
S04-S05	Feed Gas Compressor Turbines	• Stack locations • Building location • Number of equipment • Operation type (i.e., simple cycle) • Fuel type • Fuel higher and lower heating values • Control device • Operation scenario (i.e., 100% load) • Operation time • Stack parameters • Updated stack height • 7 startups and 7 shutdowns per year	• Emission profiles • Fuel flow • Exhaust characteristics • Inlet air temperature requirement	• 2 startups and 1 shutdown per day • Operation on treated gas only • SO_2, H_2SO_4, and condensable PM emissions based on mass balance of the sulfur in the fuel • Contingency factor applied to startup and shutdown emissions
S06-S07	CO_2 Compressor Turbines	• Stack locations • Building location • Updated manufacturer and model number • Number of equipment • Operation type (i.e., simple cycle) • Fuel type • Fuel higher and lower heating values	• Emission profiles • Fuel flow • Exhaust characteristics • Inlet air temperature requirement	• 2 startups and 1 shutdown per day • Operation on treated gas only • SO_2, H_2SO_4, and condensable PM emissions based on mass balance of the sulfur in the fuel • Contingency factor applied to startup and shutdown emissions

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MODELING ID	DESCRIPTION	DATA PROVIDED BY ARCTIC SOLUTIONS	DATA PROVIDED BY VENDORS	ASSUMPTIONS PROVIDED BY CH2M HILL
		• Control device • Operation scenario (i.e., 100% load) • Operation time • Stack parameters • Updated stack height • 7 startups and 7 shutdowns per year		
S08-S11	Emergency Diesel Generators (2.5MW)	• Building location • Number of equipment • Tier 4 engine • Fuel type • Updated Stack Height		• 1-hour per day for maintenance/testing • 100-hour per year annual operation • Stack locations on eastern side of building • Exhaust characteristics (Indicative Cummins engine specification sheet) • Manufacturer and model number • SO_2 emissions based on mass balance of the sulfur in the fuel • Stack parameters
S12-S15	Heaters	• Stack locations • Building location • Manufacturer • Number of equipment • Fuel type • Fuel higher and lower heating values • Operation time • Updated stack height • Emission factors		• 3 operating at one time (fourth is backup) • 109-foot-tall stack • Heater exhaust characteristics (similar unit) • Operation on treated gas only • SO_2 and H_2SO_4 emissions based on mass balance of the sulfur in the fuel • Stack diameter
S16-S17	High Pressure Flares	• Stack locations • Manufacturer and model number • Number of equipment • Fuel type • Fuel flow rates • Fuel higher and lower heating values • Gas consumption rates		• No emergency flaring included • Purge/pilot exhaust characteristics (from similar unit/engineering assumptions) • Operation on treated gas only • SO_2, H_2SO_4, and H_2S emissions based on mass balance of the sulfur in the fuel

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MODELING ID	DESCRIPTION	DATA PROVIDED BY ARCTIC SOLUTIONS	DATA PROVIDED BY VENDORS	ASSUMPTIONS PROVIDED BY CH2M HILL
		• Operation time • Updated stack height • Emission factors		• Stack diameter
S18-S19	Low Pressure Flares	• Stack locations • Manufacturer and model number • Number of equipment • Fuel type • Fuel flow rates • Fuel higher and lower heating values • Gas consumption rates • Operation time • Updated stack height • Emission factors		• No emergency flaring included • Purge/pilot exhaust characteristics (from similar unit/engineering assumptions) • Operation on treated gas only • SO_2, H_2SO_4, and H_2S emissions based on mass balance of the sulfur in the fuel • Stack diameter
S20-S23	–Fire Pump Generators	• Building location • Number of equipment • Fuel type • Updated stack height		• 1-hour per day for maintenance/testing • 100-hour per year annual operation • Stack locations on western side of building • Exhaust characteristics (Indicative CAT engine specification sheet) • Stack parameters • Manufacturer and model number • Tier 4 engine • SO_2 emissions based on mass balance of the sulfur in the fuel
S24-S26	Emergency Generators (1,000 ekW)	• Building location • Number of equipment • Fuel type		• 1-hour per day for maintenance/testing • 100-hour per year annual operation • Stack parameters (similar unit) • Exhaust characteristics (indicative engine manufacturer specification sheet) • Manufacturer and model number • Tier 4 engine

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MODELING ID	DESCRIPTION	DATA PROVIDED BY ARCTIC SOLUTIONS	DATA PROVIDED BY VENDORS	ASSUMPTIONS PROVIDED BY CH2M HILL
				• SO_2 emissions based on mass balance of the sulfur in the fuel
S27-S29	Camp Emergency Generators (1,350 kW)	• Location • Number of equipment • Fuel type		• 1-hour per day for maintenance/testing • 100-hour per year annual operation • Stack locations (picked 2 of 3 locations in GCF layout) • Stack parameters (similar unit) • Exhaust characteristics (indicative engine manufacturer spec sheet) • Manufacturer and model number • Tier 4 engine • SO_2 emissions based on mass balance of the sulfur in the fuel
S31	Nonroad Sources	Equipment number, type, rating, and fuel usage.		• Pseudo Point Source • Not impacted by downwash • Location • 8,760-hour per year annual operation • Nonroad engines assumed to be Tier 2 engines consistent with construction emissions assumptions. • Indicative models were assumed to estimate horsepower. • EPA guidance were used to determine emissions.
SXX	Burn Pit			Not included
All Units				
Modeling Options	Modeling Options	• GCF Location • Property boundary is equal to the gravel pad • General GCF building layout • Building dimensions for each module (L/W/H)		• Treated Gas Only scenario • AERMOD modeling system • Default options • FLAT terrain (ADEC) • PAD A meteorological data (ADEC) • $NO_x \rightarrow NO_2$ Tier 2 ARM Method (ADEC)

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MODELING ID	DESCRIPTION	DATA PROVIDED BY ARCTIC SOLUTIONS	DATA PROVIDED BY VENDORS	ASSUMPTIONS PROVIDED BY CH2M HILL
				• CCP ambient data as background • CO background from Fairbanks • GCF-only $PM_{2.5}$ Increment-consuming facility within 20 km • Ambient background satisfies competing source analysis • Power and compressor turbine worst-case load and ambient temperature scenario used for full GCF modeling • Ozone and secondary $PM_{2.5}$ evaluated qualitatively • Emissions from diesel storage are assumed to be insignificant; therefore, are not included.

Notes:
Treated gas has 4 ppm H_2S content.
Stack parameters include stack height and diameter.
Exhaust characteristics include exhaust temperature, flow, and velocity.
Stack location includes coordinates or map location.

ARM - Ambient Ratio Method
CAT – Caterpillar
CCP – Central Compression Plant
ekW – electrical kilowatt
EPA – U.S. Environmental Protection Agency
H_2S – hydrogen sulfide
H_2SO_4 - sulfuric acid mist
ID - Identification
L/W/H – Length/Width/Height
PM - Particulate Matter
ppm – part per million
PTE – Potential to Emit
SO_2 – sulfur dioxide

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Appendix B
Results from the Load Analyses

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Table B.1 Load Analysis Results for Annual NO_2 and PM

EMISSION UNIT NUMBER	CH2M HILL CASE NUMBER FROM EI	1.1			1.1		
	UNIT DESCRIPTION	NO_2 CONCENTRATION ($\mu g/m^2$)	1.3	1.5	PM CONCENTRATION ($\mu g/m^2$)	1.3	1.5
S01	Gas Turbine Power Generator	0.24	0.28	0.37	0.02	0.02	0.01
S02	Gas Turbine Power Generator	0.67	0.72	0.55	0.05	0.04	0.02
S03	Gas Turbine Power Generator	0.08	0.10	0.23	0.01	0.01	0.01
S12	Heating Medium Fired Heater	1.15	-	-	0.08	-	-
S13	Heating Medium Fired Heater	1.13	-	-	0.08	-	-
S14	Heating Medium Fired Heater	1.27	-	-	0.09	-	-
S15	Heating Medium Fired Heater	1.25	-	-	0.09	-	-

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Table B.2 Load Analysis Results for 24-Hour PM

EMISSION UNIT NUMBER	CH2M HILL CASE NUMBER FROM EI UNIT DESCRIPTION	1.1	1.2	1.3	1.4	1.5	1.11	1.12	1.13	1.14	1.15	1.6	1.7	1.8	1.9	1.10
		PM CONCENTRATION ($\mu g/m^2$)														
S01	Gas Turbine Power Generator	1.5	1.4	1.3	1.2	0.4	1.4	1.3	1.3	1.2	0.3	1.4	1.3	1.2	1.1	0.3
S02	Gas Turbine Power Generator	1.3	1.2	1.1	1.0	0.4	1.3	1.1	1.1	0.9	0.3	1.2	1.0	1.0	0.9	0.3
S03	Gas Turbine Power Generator	0.6	0.6	0.6	0.7	0.3	0.6	0.6	0.6	0.6	0.3	0.6	0.6	0.7	0.6	0.3
S04	Feed Gas Compressor Gas Turbine	0.2	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S05	Feed Gas Compressor Gas Turbine	0.4	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S06	CO_2 Compressor Gas Turbine	0.2	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S07	CO_2 Compressor Gas Turbine	0.3	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	Heating Medium Fired Heater	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	Heating Medium Fired Heater	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	Heating Medium Fired Heater	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	Heating Medium Fired Heater	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table B.3 Load Analysis Results for 8-Hour CO

EMISSION UNIT NUMBER	CH2M HILL CASE NUMBER FROM EI	1.1	1.2	1.3	1.4	1.5	1.11	1.12	1.13	1.14	1.15	1.6	1.7	1.8	1.9	1.10
	DESCRIPTION	CO CONCENTRATION (µg/m^2)														
S01	Gas Turbine Power Generator	15.3	14.0	15.7	18.8	34.2	14.9	13.6	13.1	12.0	33.3	14.2	12.9	12.4	11.5	32.7
S02	Gas Turbine Power Generator	12.9	11.6	12.8	17.1	46.8	12.5	11.1	10.6	10.9	44.5	11.7	10.4	11.0	10.4	42.5
S03	Gas Turbine Power Generator	11.1	11.0	12.8	16.2	27.0	11.1	11.0	10.8	10.3	26.8	11.1	10.8	10.5	9.9	26.8
S04	Feed Gas Compressor Gas Turbine	2.3	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S05	Feed Gas Compressor Gas Turbine	8.9	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S06	CO_2 Compressor Gas Turbine	30.1	30.6	-	-	-	-	-	-	-	-	-	-	-	-	-
S07	CO_2 Compressor Gas Turbine	38.0	38.7	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	Heating Medium Fired Heater	12.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	Heating Medium Fired Heater	12.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	Heating Medium Fired Heater	35.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	Heating Medium Fired Heater	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table B.4 Load Analysis Results for 1-Hour NO_2

EMISSION UNIT NUMBER	CH2M HILL CASE NUMBER FROM EI	1.1	1.2	1.3	1.4	1.5	1.11	1.12	1.13	1.14	1.15	1.6	1.7	1.8	1.9	1.10
	DESCRIPTION	NO_2 CONCENTRATION ($\mu g/m^2$)														
S01	Gas Turbine Power Generator	92.3	88.8	104.0	133.3	124.0	88.3	87.4	84.5	83.1	122.7	86.8	83.5	83.1	82.5	122.1
S02	Gas Turbine Power Generator	58.7	54.4	63.2	85.5	148.2	56.6	52.9	52.2	53.4	139.3	54.3	52.5	53.7	53.3	133.9
S03	Gas Turbine Power Generator	85.2	74.8	81.6	104.2	89.8	81.5	70.6	66.4	65.9	84.7	75.1	65.4	65.3	65.2	83.5
S04	Feed Gas Compressor Gas Turbine	6.9	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-
S05	Feed Gas Compressor Gas Turbine	19.3	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-
S06	CO_2 Compressor Gas Turbine	6.3	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
S07	CO_2 Compressor Gas Turbine	12.1	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	Heating Medium Fired Heater	82.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	Heating Medium Fired Heater	81.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	Heating Medium Fired Heater	157.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	Heating Medium Fired Heater	128.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table B.5 Load Analysis Results for 1-Hour CO

EMISSION UNIT NUMBER	CH2M HILL CASE NUMBER FROM EI	1.1	1.2	1.3	1.4	1.5	1.11	1.12	1.13	1.14	1.15	1.6	1.7	1.8	1.9	1.10
	DESCRIPTION	CO CONCENTRATION (µg/m^2)														
S01	Gas Turbine Power Generator	58.8	61.4	69.9	85.5	164.8	57.5	63.2	63.8	64.8	163.2	59.6	64.2	64.4	65.0	37.4
S02	Gas Turbine Power Generator	37.4	37.6	42.5	54.8	196.9	36.8	38.2	39.4	41.6	185.2	37.3	40.4	41.6	41.9	178.3
S03	Gas Turbine Power Generator	54.2	51.8	54.8	66.9	119.3	53.0	51.0	50.1	51.4	112.7	51.6	50.3	50.7	51.3	111.2
S04	Feed Gas Compressor Gas Turbine	5.1	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-
S05	Feed Gas Compressor Gas Turbine	14.3	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-
S06	CO_2 Compressor Gas Turbine	263.8	276.3	-	-	-	-	-	-	-	-	-	-	-	-	-
S07	CO_2 Compressor Gas Turbine	507.8	536.1	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	Heating Medium Fired Heater	43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	Heating Medium Fired Heater	43.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	Heating Medium Fired Heater	83.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	Heating Medium Fired Heater	68.0	-	-	-	-	-	-	-	-	-	-	-	-	-	

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Table 5.16-2 Potential Camp Operations Maximum 12-month Emissions

Camp Name	VOC Emissions (STPY)	NO_x Emissions (STPY)	CO Emissions (STPY)	SO_2 Emissions (STPY)	PM_{10} Emissions (STPY)	$PM_{2.5}$ Emissions (STPY)	CO_{2E} Emissions (STPY)	HAP Emissions (STPY)
Cantwell	36.2	35	4.4	0.63	3.7	3.6	54,402	2.1
Dietrich	50.5	49	6.1	0.88	5.1	5.1	75,860	2.9
Dunbar	39.7	39	4.8	0.69	4.0	4.0	59,655	2.3
Five Mile	57.8	57	7.0	1.01	5.9	5.8	86,900	3.3
Franklin Bluffs	57.7	56	6.9	1.01	5.9	5.8	86,722	3.3
Galbraith Lake	86.4	85	10.4	1.51	8.8	8.7	129,905	5.0
Happy Valley	67.0	65	8.1	1.17	6.8	6.7	100,612	3.9
Healy	56.1	55	6.7	0.98	5.7	5.6	84,229	3.2
Livengood	86.7	85	10.4	1.51	8.8	8.7	130,350	5.0
Prospect	84.7	83	10.2	1.48	8.6	8.5	127,234	4.9
Prudhoe Bay	43.6	43	5.2	0.76	4.4	4.4	65,442	2.5
Rustic Wilderness	52.4	51	6.3	0.91	5.3	5.3	78,709	3.0
Swan Lake	45.2	44	5.4	0.79	4.6	4.5	67,935	2.6

Notes:

a. Please refer to deliverable # 008-49-911-002 for details on emissions calculations and assumptions.
b. Only emissions from onsite stationary sources are summarized in this table.
c.
d. The emissions information presented for the construction camps is current as of information available on August 1, 2014.

CO – Carbon Monoxide
NO_X – Oxides of Nitrogen
SO_2 – Sulfur Dioxide
VOC – Volatile Organic Compound

Table 5.16-3 Gas Conditioning Facility Emission Unit Inventory

Item	Number of Units	Purpose	Rated Capacity	Fuel	Change from the FEIS project design (USACE, 2012)
Power Generation Turbines	3	To generate power for the GCF.	29 MW	Treated and Untreated Gas	New Equipment[c.]
Feed-gas Compressor Turbines	2	To drive CO_2 compressor.	22 MW	Treated and Untreated Gas	New Equipment[c.]
CO_2 Compressor Turbines	2	To drive Feed-gas Compressor.	11.93 MW	Treated and Untreated Gas	New Equipment[c.]
Emergency Power Generators	4	Emergency.	2.5 MW	ULSD	Same as 2012 project
Heaters	4 (3 Operating + 1 Spare)	To heat Propylene Glycol from 150 to 240°F.	129.60 MMBTU/hr (LHV)	Treated and Untreated Gas	New Equipment[c.]
Flares	2	To burn HC at 100 psig.	35,625 MMBTU/hr (LHV)	Treated and Untreated Gas	Same as 2012 project
	2	To burn HC at 10 psig.	990 MMBTU/hr (LHV)	Treated and Untreated Gas	Same as 2012 project
Fire Pump Generators	4	To extinguish fires inside a module during an emergency event.	0.4 MW	ULSD	New Equipment[c.]
Other Emergency Generators	2	Generators for infrastructure, camps, and shops. Emergency use only after construction.	1.5 MW	ULSD	Same as 2012 project
Burn Pit	1	Burn excess HC liquid from the Flare Knock-out Drum during an emergency flaring event.	TBD	-	New Equipment[c.]

Notes:
[a]The equipment list for the GCF is current as of information available on August 15, 2014.
[b]Please refer to deliverable # 008-14-910-010 for details on the GCF inventory.
[c]Although there is new equipment for the current design of the GCF, overall air quality impacts are expected to be the same between the project proposed in the FEIS (USACE, 2012) and the current project.
°F - Fahrenheit
CO_2 - Carbon Dioxide
HC - Hydrocarbon
LHV - Lower Heating Value
MMBTU/hr - million British thermal units per hour
MW - megawatt
psig - pound per square inch gauge
TBD - To Be Determined
ULSD - Ultra-low-sulfur Diesel

Table 5.16-4 Gas Conditioning Facility Operations Emissions

Emission Source	NO_X Emissions (STPY)	CO Emissions (STPY)	PM_{10} Emissions (STPY)	$PM_{2.5}$ Emissions (STPY)	SO_2 Emissions (STPY)	VOC Emissions (STPY)	HAP Emissions (STPY)	$CO2_E$ Emissions (STPY)
GCF in FEIS (USACE, 2012)	4,442	913	49	49	4	170	68	519,695
GCF in current design	781	548	52.6	52.6	5.14	168	10	959,041

Notes:

a. The emissions information presented for the GCF is current as of information available on August 15, 2014.

b. Please refer to deliverable # 008-14-910-010 for details on the GCF inventory, calculations and assumptions.

Table 5.16-5 Impact of Revisions to Aboveground Facility Operations Emissions

Emission Source	NO_X Emissions (STPY)	CO Emissions (STPY)	PM_{10} Emissions (STPY)	$PM_{2.5}$ Emissions (STPY)	SO_2 Emissions (STPY)	VOC Emissions (STPY)	HAP Emissions (STPY)	$CO2_E$ Emissions (STPY)
GCF in FEIS (USACE, 2012)	4,442	913	49	49	4	170	68	519,695
Two Compressor Stations in FEIS (USACE, 2012)	638	538	38	38	1.6	78	4	164,322
Straddle and Offtake Facility	367	147	10	10	0.6	19	3	85,639
Total 2012 Operations	**5,447**	**1,598**	**97**	**97**	**6.2**	**267**	**75**	**769,656**
Current Project Operations	**781**	**548**	**52.6**	**52.6**	**5.14**	**168**	**10**	**959,041**

Notes:

a. The emissions information presented for the GCF is current as of information available on August 15, 2014.

b. Please refer to deliverable # 008-14-910-010 for details on the GCF inventory, calculations and assumptions.

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Annual Emissions Summary

Year	Emissions (tons)										
-1	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	1.70	0	0	0	0	0	0	0	0	0	1.51E-02
Onroad Equipment	0	0	0	0	0	0	0	0	0	0	0
NONRoad Equipment	0	0	0	0	0	0	0	0	0	0	0
Marine Equipment	0	0	0	0	0	0	0	0	0	0	0
ANNUAL TOTAL	**1.70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.51E-02**

	Emissions (tons)										
0	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	1.70	0	0	0	0	0	0	0	0	0	1.51E-02
Onroad Equipment	0.83	7.97	23.97	0.03	0.64	0.51	1,934	0.02	0.05	1,940	0.17
NONRoad Equipment	0	0	0	0	0	0	0	0	0	0	0
Marine Equipment	0	0	0	0	0	0	0	0	0	0	0
ANNUAL TOTAL	**2.53**	**7.97**	**23.97**	**0.03**	**0.64**	**0.51**	**1,934**	**0.02**	**0.05**	**1,940**	**0.18**

	Emissions (tons)										
1	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	1.72	0.53	0.44	0.0032	0.040	0.040	1,538	0.0029	0.029	1,539	4.54E-02
Onroad Equipment	1.67	15.34	49.17	0.05	1.25	0.99	3,817	0.03	0.09	3,829	0.34
NONRoad Equipment	8.04	145	56.3	0.64	8.50	8.26	18,425	0.15	0.75	18,489	0.43
Marine Equipment	0	0	0	0	0	0	0	0	0	0	0
ANNUAL TOTAL	**11.4**	**161.1**	**105.9**	**0.7**	**9.8**	**9.3**	**23,780**	**0.2**	**0.9**	**23,857**	**0.8**

	Emissions (tons)										
2	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	1.70	0.085	0.071	0.0005	0.0064	0.0064	50.5	0.0001	0.0010	50.6	1.67E-02
Onroad Equipment	3.16	29.63	91.43	0.09	2.39	1.90	7,221	0.06	0.18	7,245	0.64
NONRoad Equipment	14.5	255	97.9	0.32	15.5	15.0	33,499	0.27	1.36	33,614	0.81
Marine Equipment	101	1991	1032	268	144	140	142,354	4.13	18.6	144,023	3.91
ANNUAL TOTAL	**120.1**	**2275.3**	**1220.9**	**268.6**	**162.1**	**156.8**	**183,125**	**4.5**	**20.1**	**184,933**	**5.4**

	Emissions (tons)										
3	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	1.70	0	0	0	0	0	0	0	0	0	1.51E-02
Onroad Equipment	0.97	9.30	27.97	0.03	0.75	0.60	2,256	0.02	0.06	2,263	0.19
NONRoad Equipment	0	0	0	0	0	0	0	0	0	0	0
Marine Equipment	0	0	0	0	0	0	0	0	0	0	0
ANNUAL TOTAL	**2.66**	**9.30**	**27.97**	**0.03**	**0.75**	**0.60**	**2,256**	**0.02**	**0.06**	**2,263**	**0.21**

Notes:

(1) Onsite sources include all stationary sources (diesel refueling, gasoline refueling, storage tank and heaters)

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
North Slope Construction
Construction Activity Emissions Summary

		Emissions (tons)										
Construction Activity	Time Period	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
		27	28	29	30	31	32	33	34	35		
West Dock Upgrades - Dredging	Monthly	1.11	15.1	5.62	0.019	0.89	0.86	2,019	0.016	0.081	2,026	0.053
	-1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	1	1.11	15.1	5.62	0.019	0.89	0.86	2,019	0.016	0.081	2,026	0.053
	2	3.33	45.3	16.9	0.058	2.66	2.57	6,056	0.049	0.24	6,077	0.16
	3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	Rolling Annual	4.45	60.4	22.5	0.077	3.54	3.43	8,075	0.066	0.32	8,103	0.21
	S0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S0.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S1.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W2	4.45	60.4	22.5	0.077	3.54	3.43	8,075	0.066	0.32	8,103	0.21
	S2.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	W3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	S3.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
West Dock Upgrades - Bridge Bypass Abutment Installation	Monthly	1.63	26.7	12.5	0.127	1.58	1.52	3,740	0.029	0.14	3,752	0.098
	-1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	1	8.16	133	62.3	0.63	7.89	7.62	18,700	0.14	0.71	18,760	0.49
	2	0.00	0.0	0.0	0.00	0.00	0.00	0	0.00	0.00	0	0.00
	3	0.00	0.0	0.0	0.00	0.00	0.00	0	0.00	0.00	0	0.00
	Rolling Annual	8.16	133	62.3	0.63	7.89	7.62	18,700	0.14	0.71	18,760	0.49
	S0	0.00	0.0	0.0	0.00	0.00	0.00	0	0.000	0.00	0	0.00
	W0	0.00	0.0	0.0	0.00	0.00	0.00	0	0.000	0.00	0	0.00
	S0.5	0.00	0.0	0.0	0.00	0.00	0.00	0	0.000	0.00	0	0.00
	W1	6.53	106.7	49.9	0.51	6.31	6.10	14,960	0.115	0.57	15,008	0.39
	S1.5	1.63	26.7	12.5	0.127	1.58	1.52	3,740	0.029	0.14	3,752	0.098
	W2	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	S2.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	W3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	S3.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
West Dock Upgrades - West Dock Ramp Installation	Monthly	1.00	14.6	7.32	0.019	0.88	0.84	1,989	0.016	0.079	1,996	0.057
	-1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	2	9.00	131	65.9	0.17	7.90	7.60	17,899	0.15	0.71	17,960	0.51
	3	0.00	0.0	0.0	0.00	0.00	0.00	0	0.00	0.00	0	0.00
	Rolling Annual	9.00	131	65.9	0.17	7.90	7.60	17,899	0.15	0.71	17,960	0.51
	S0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S0.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S1.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W2	2.00	29.1	14.6	0.038	1.75	1.69	3,978	0.033	0.16	3,991	0.11
	S2.5	6.00	87.4	43.9	0.12	5.26	5.07	11,933	0.098	0.47	11,974	0.34
	W3	1.00	14.6	7.32	0.019	0.88	0.84	1,989	0.016	0.079	1,996	0.057
	S3.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
Module Transportation Module Sealift and Offload	Monthly	52	1,017	525	134	74	71	73,991	2.09	9.40	74,836	2.03
	-1	0	0	0	0	0	0	0	0.00	0	0	0.00
	0	0	0	0	0	0	0	0	0.00	0	0	0.00
	1	0	0	0	0	0	0	0	0.00	0	0	0.00
	2	103	2,034	1,049	268	147	143	147,983	4.17	18.8	149,671	4.06
	3	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	Rolling Annual	103	2,034	1,049	268	147	143	147,983	4.17	18.8	149,671	4.06
	S0	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	W0	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	S0.5	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	W1	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	S1.5	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	W2	0	0	0	0	0	0	0	0.00	0.0	0	0.00
	S2.5	103	2,034	1,049	268	147	143	147,983	4.17	18.8	149,671	4.06
	W3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	S3.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
North Slope Construction
Construction Activity Emissions Summary

		Emissions (tons)										
Construction Activity	Time Period	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Module Transportation - Module Transport to GCF	Monthly	1.24	20.5	8.46	0.026	1.28	1.24	2,693	0.022	0.11	2,702	0.074
	-1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.000
	2	2.48	41.0	16.9	0.052	2.56	2.47	5,386	0.044	0.22	5,404	0.15
	3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	Rolling Annual	2.48	41.0	16.9	0.052	2.56	2.47	5,386	0.044	0.22	5,404	0.15
	S0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S0.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S1.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	W2	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.00	0	0.00
	S2.5	2.48	41.0	16.9	0.052	2.56	2.47	5,386	0.044	0.22	5,404	0.15
	W3	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	S3.5	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
North Slope Construction - Personnel and Material Transport to the North Slope	Monthly	0.069	0.66	2.00	0.002	0.05	0.04	161	0.001	0.004	162	0.014
	-1	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	0	0.83	8.0	24.0	0.025	0.64	0.51	1,934	0.017	0.047	1,940	0.17
	1	1.32	12.6	38.0	0.040	1.02	0.81	3,062	0.027	0.075	3,071	0.26
	2	2.49	23.9	71.9	0.075	1.93	1.53	5,801	0.051	0.14	5,819	0.50
	3	0.97	9.30	28.0	0.029	0.75	0.60	2,256	0.020	0.055	2,263	0.19
	Rolling Annual	2.49	23.9	71.9	0.075	1.93	1.53	5,801	0.051	0.14	5,819	0.50
	S0	0.00	0.0	0.0	0.000	0.00	0.00	0	0.000	0.000	0	0.000
	W0	0.28	2.66	7.99	0.008	0.21	0.17	645	0.006	0.016	647	0.056
	S0.5	0.42	3.98	12.0	0.013	0.32	0.26	967	0.008	0.024	970	0.083
	W1	0.42	3.98	12.0	0.013	0.32	0.26	967	0.008	0.024	970	0.083
	S1.5	0.69	6.64	20.0	0.021	0.54	0.43	1,611	0.014	0.039	1,617	0.14
	W2	1.18	11.3	34.0	0.036	0.91	0.72	2,739	0.024	0.067	2,748	0.24
	S2.5	1.25	12.0	36.0	0.038	0.96	0.77	2,900	0.025	0.071	2,910	0.25
	W3	1.11	10.6	32.0	0.034	0.86	0.68	2,578	0.023	0.063	2,586	0.22
	S3.5	0.28	2.66	7.99	0.008	0.21	0.17	645	0.006	0.016	647	0.056

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
North Slope Construction
NonRoad Equipment: Emissions Calculations

Equipment	Category	Quantity	bhp[a]	Tier Level	Load Factor[b]	Transient Adjustment Factor	Hours/Month[e]	Fuel Consumption (lb/hp-hr)	Emissions Rates (g/bhp-hr)																
									VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Dredging																									
Ice Tractor - Drill/Pump	Tractors/Trailers	6	200	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Lube Truck	Tractors/Trailers	2	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	2	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Water Truck 2500 gallon	Tractors/Trailers	2	200	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
48 CY B70	Gravel Haul Equipment	6	500	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
336 Excavator	Backhoes/Graders	3	190	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Ditchwich Trencher (RT 120 Quad)	Backhoes/Graders	1	120	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.32	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
966 Loader w / bucket	Forklifts/Loaders	1	235	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	16	13	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	2	180	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
West Dock Upgrades - Bridge Bypass Abutment Installation																									
1 T. Flatbed	Tractors/Trailers	1	400	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	4	525	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	2	145	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Mechanic's Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Tire Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Lube Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Water Truck 2500 gallon	Tractors/Trailers	1	200	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
SOW	Tractors/Trailers	1	475	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
30 CY Maxi Haul End Dump[c]	Gravel Haul Equipment	8	600	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Ditchwich Trencher (RT 120 Quad)	Backhoes/Graders	1	113	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.32	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
200 Ton Manitowoc Lattice	Cranes	2	340	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
966 Loader w / bucket	Forklifts/Loaders	1	235	2	0.59	High LF	720	0.37																	
1600 CFM	Air Compressors/Drills	1	560	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
APE D80-42 Diesel Hammer[d]	Air Compressors/Drills	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
APE 200-6 Vibratory Hammer	Air Compressors/Drills	2	765	2	0.43	Average LF	720	0.37	0.17	4.14	0.84	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	2.5E-03	9.1E-04	6.2E-04	0.0E+00	2.6E-04	8.2E-05	2.5E-05	4.2E-04	6.9E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	16	13	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
Stadium Light	Light Plants	2	18	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
JLG Articulating Lift 60' - 79'	Aerial Work Platform	1	50	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.68	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
400 amp Diesel	Welding	4	100	2	0.21	Low LF	720	0.43	0.80	4.55	2.45	0.0059	0.52	0.51	623	5.1E-03	2.5E-02	3.6E-03	1.6E-03	1.1E-03	1.5E-04	4.5E-03	2.9E-03	3.5E-04	3.2E-04	6.4E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	2	180	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
West Dock Upgrades - West Dock Ramp Installation																									
1 T. Flatbed	Tractors/Trailers	1	400	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	2	525	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Mechanic's Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Tire Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Lube Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
30 CY Maxi Haul End Dump[c]	Gravel Haul Equipment	4	600	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
324 Excavator	Backhoes/Graders	1	190	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
988 Loader w/ bucket	Forklifts/Loaders	1	500	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
966 Loader w/ bucket	Forklifts/Loaders	2	235	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	10	13	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
Generator, 80kw	Portable Generators	1	120	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Generator, 120kw	Portable Generators	2	180	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
CS56 Vibratory Roller	Misc. Equipment/Facilities	1	156	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Hand Compactor	Misc. Equipment/Facilities	2	13	2	0.21	Low LF	720	0.48	1.04	4.93	6.11	0.0065	0.77	0.75	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
Module Transportation - Module Sealift and Offload																									
35 Ton RT	Cranes	1	139	2	0.43	Average LF	300	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
3 Ton Forklift	Forklifts/Loaders	4	49	2	0.59	High LF	600	0.41	0.30	4.53	2.58	0.0056	0.61	0.60	592	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.1E-04
15 Ton Forklift	Forklifts/Loaders	2	133	2	0.59	High LF	600	0.37	0.37	3.93	1.46	0.0050	0.33	0.32	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
185 CFM	Air Compressors/Drills	8	55	2	0.43	Average LF	360	0.41	0.38	4.74	2.60	0.0055	0.35	0.34	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
Maxlite - 7.5 KW (Magnum MLT4080)[e]	Light Plants	25	13	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
JLG Articulating Lift 60' - 79'	Aerial Work Platform	4	50	2	0.21	Low LF	360	0.48	0.87	5.22	6.69	0.0065	0.70	0.68	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
JLG Articulating Lift 60' - 120'	Aerial Work Platform	1	50	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.68	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
250-300 amp Diesel[g]	Welding	6	38	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.95	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
Generator, 80kw	Portable Generators	6	120	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Generator, 120kw	Portable Generators	2	180	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Power Pack Units	Misc. Equipment/Facilities	16	523	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Ballast Pumps	Marine Equipment	12	40	2	0.59	High LF	720	0.41	0.30	4.53	2.58	0.0056	0.61	0.60	592	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.1E-04
Module Transportation - Module Transport to GCF																									
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
3 Ton Forklift	Forklifts/Loaders	4	49	2	0.59	High LF	600	0.41	0.30	4.53	2.58	0.0056	0.61	0.60	592	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.1E-04
15 Ton Forklift	Forklifts/Loaders	2	133	2	0.59	High LF	600	0.37	0.37	3.93	1.46	0.0050	0.33	0.32	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
185 CFM	Air Compressors/Drills	8	55	2	0.43	Average LF	360	0.41	0.38	4.74	2.60	0.0055	0.35	0.34	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
Maxlite - 7.5 KW (Magnum MLT4080)[e]	Light Plants	25	13	2	0.43	Average LF	720	0.41	0.45	4.48	2.38	0.0055	0.39	0.38	587	4.8E-03	2.4E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.2E-03	2.8E-03	3.3E-04	3.1E-04	6.0E-04
JLG Articulating Lift 60' - 79'	Aerial Work Platform	4	50	2	0.21	Low LF	360	0.48	0.87	5.22	6.69	0.0065	0.70	0.68	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
JLG Articulating Lift 60' - 120'	Aerial Work Platform	1	50	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.68	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
250-300 amp Diesel[g]	Welding	6	38	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.95	692	5.6E-03	2.8E-02	4.0E-03	1.7E-03	1.2E-03	1.7E-04	5.0E-03	3.3E-03	3.9E-04	3.6E-04	7.1E-04
Generator, 80kw	Portable Generators	6	120	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.26	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Generator, 120kw	Portable Generators	2	180	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.3E-03	2.1E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Power Pack Units	Misc. Equipment/Facilities	16	523	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.23	533	4.3E-03	2.2E-02	3.0E-03	1.3E-03	9.3E-04	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04

[a] HP from ASAP Construction Equipment Rev B (7-15-2014) spreadsheet provided by Fluor

[b] Equipment load factors from Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling (http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10016.pdf)

[c] Ritchie Specs was used to estimate the hp for this equipment type since it was not provided

[d] Fuel consumption from the Manufacturer's specification, AP-42 emission factors (criteria pollutants and HAPs), and 40 CFR 98.33 Subpart C (GHGs) were used to estimate emissions. See 'APE D80-42 Diesel Hammer' tab for calculations.

[e] Hours of

AGDC: Alaska Stand Alone Pipeline (ASAP) Project
North Slope Construction
NonRoad Equipment: Emissions Calculations

									Emissions Rates (tons/month)[f]																
Equipment	Category	Quantity	bhp[a]	Tier Level	Load Factor[b]	Transient Adjustment Factor	Hours/Month[e]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[g]	Total HAPs	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Dredging																												
Ice Tractor - Drill/Pump	Tractors/Trailers	6	200	2	0.43	Average LF	720	0.37	1.3E-01	1.7E+00	3.4E-01	2.0E-03	7.9E-02	7.7E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	5.1E-03	1.2E-03	5.4E-04	3.8E-04	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
Lube Truck	Tractors/Trailers	2	260	2	0.59	High LF	720	0.37	8.2E-02	9.3E-01	3.1E-01	1.2E-03	5.8E-02	5.6E-02	1.3E+02	1.1E-03	5.3E-03	1.3E+02	3.1E-03	7.4E-04	3.3E-04	2.3E-04	3.1E-05	9.4E-04	6.1E-04	7.4E-05	6.7E-05	1.3E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	2	260	2	0.59	High LF	720	0.37	8.2E-02	9.3E-01	3.1E-01	1.2E-03	5.8E-02	5.6E-02	1.3E+02	1.1E-03	5.3E-03	1.3E+02	3.1E-03	7.4E-04	3.3E-04	2.3E-04	3.1E-05	9.4E-04	6.1E-04	7.4E-05	6.7E-05	1.3E-04
Water Truck 2500 gallon	Tractors/Trailers	2	200	2	0.59	High LF	720	0.37	6.3E-02	7.2E-01	2.4E-01	9.4E-04	4.5E-02	4.3E-02	1.0E+02	8.1E-04	4.0E-03	1.0E+02	2.4E-03	5.7E-04	2.5E-04	1.7E-04	2.4E-05	7.2E-04	4.7E-04	5.7E-05	5.2E-05	1.0E-04
48 CY B70	Gravel Haul Equipment	6	500	2	0.59	High LF	720	0.37	2.5E-01	5.8E+00	2.0E+00	7.1E-03	3.3E-01	3.2E-01	7.5E+02	6.1E-03	3.0E-02	7.5E+02	1.8E-02	4.3E-03	1.9E-03	1.3E-03	1.8E-04	5.4E-03	3.5E-03	4.2E-04	3.9E-04	7.7E-04
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	3.7E-02	8.5E-01	2.9E-01	1.0E-03	4.9E-02	4.7E-02	1.1E+02	8.8E-04	4.4E-03	1.1E+02	2.6E-03	6.2E-04	2.7E-04	1.9E-04	2.6E-05	7.9E-04	5.1E-04	6.2E-05	5.7E-05	1.1E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	5.1E-02	1.1E+00	6.3E-01	1.4E-03	6.7E-02	6.5E-02	1.5E+02	1.2E-03	6.1E-03	1.5E+02	3.6E-03	8.6E-04	3.8E-04	2.6E-04	3.6E-05	1.1E-03	7.0E-04	8.5E-05	7.8E-05	1.5E-04
336 Excavator	Backhoes/Graders	3	190	2	0.59	High LF	720	0.37	8.9E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.2E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	3.5E-03	8.1E-04	3.6E-04	2.5E-04	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
Ditchwich Trencher (RT 120 Quad)	Backhoes/Graders	1	120	2	0.59	High LF	720	0.37	2.1E-02	2.2E-01	8.2E-02	2.8E-04	1.8E-02	1.8E-02	3.0E+01	2.4E-04	1.2E-03	3.0E+01	7.3E-04	1.7E-04	7.5E-05	5.2E-05	7.2E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	3.1E-02	3.9E-01	8.0E-02	4.8E-04	1.9E-02	1.8E-02	5.1E+01	4.2E-04	2.1E-03	5.1E+01	1.2E-03	2.9E-04	1.3E-04	9.0E-05	1.2E-05	3.7E-04	2.4E-04	2.9E-05	2.7E-05	5.3E-05
966 Loader w / bucket	Forklifts/Loaders	1	235	2	0.59	High LF	720	0.37	3.7E-02	4.2E-01	1.4E-01	5.5E-04	2.6E-02	2.5E-02	5.9E+01	4.8E-04	2.4E-03	5.9E+01	1.4E-03	3.4E-04	1.5E-04	1.0E-04	1.4E-05	4.2E-04	2.8E-04	3.3E-05	3.0E-05	6.0E-05
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	16	13	2	0.43	Average LF	720	0.41	3.2E-02	3.2E-01	1.7E-01	3.9E-04	2.8E-02	2.7E-02	4.2E+01	3.4E-04	1.7E-03	4.2E+01	1.0E-03	2.4E-04	1.0E-04	7.3E-05	1.0E-05	3.0E-04	2.0E-04	2.4E-05	2.2E-05	4.3E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	2	180	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.3E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
West Dock Upgrades - Bridge Bypass Abutment Installation																												
1 T. Flatbed	Tractors/Trailers	1	400	2	0.43	Average LF	720	0.37	2.4E-02	6.0E-01	1.3E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	1.7E-03	4.1E-04	1.8E-04	1.3E-04	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	4	525	2	0.59	High LF	720	0.37	1.8E-01	4.1E+00	1.4E+00	5.0E-03	2.3E-01	2.3E-01	5.2E+02	4.3E-03	2.1E-02	5.3E+02	1.3E-02	3.0E-03	1.3E-03	9.2E-04	1.3E-04	3.8E-03	2.5E-03	3.0E-04	2.7E-04	5.4E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	2	145	2	0.43	Average LF	720	0.37	3.5E-02	4.1E-01	9.4E-02	4.9E-04	2.6E-02	2.5E-02	5.2E+01	4.2E-04	2.1E-03	5.2E+01	1.3E-03	3.0E-04	1.3E-04	9.1E-05	1.3E-05	3.8E-04	2.5E-04	3.0E-05	2.7E-05	5.4E-05
Mechanic's Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Tire Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Lube Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Water Truck 2500 gallon	Tractors/Trailers	1	200	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	1.2E-03	2.9E-04	1.3E-04	8.7E-05	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
SOW	Tractors/Trailers	1	475	2	0.43	Average LF	720	0.37	2.8E-02	7.1E-01	1.5E-01	8.1E-04	3.1E-02	3.0E-02	8.6E+01	6.9E-04	3.5E-03	8.6E+01	2.1E-03	4.9E-04	2.1E-04	1.5E-04	2.1E-05	6.2E-04	4.0E-04	4.9E-05	4.4E-05	8.8E-05
30 CY Maxi Haul End Dump[c]	Gravel Haul Equipment	8	600	2	0.59	High LF	720	0.37	4.1E-01	8.8E+00	5.0E+00	1.1E-02	5.4E-01	5.2E-01	1.2E+03	9.7E-03	4.9E-02	1.2E+03	2.9E-02	6.9E-03	3.0E-03	2.1E-03	2.9E-04	8.7E-03	5.6E-03	6.8E-04	6.2E-04	1.2E-03
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	3.7E-02	8.5E-01	2.9E-01	1.0E-03	4.9E-02	4.7E-02	1.1E+02	8.8E-04	4.4E-03	1.1E+02	2.6E-03	6.2E-04	2.7E-04	1.9E-04	2.6E-05	7.9E-04	5.1E-04	6.2E-05	5.7E-05	1.1E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	5.1E-02	1.1E+00	6.3E-01	1.4E-03	6.7E-02	6.5E-02	1.5E+02	1.2E-03	6.1E-03	1.5E+02	3.6E-03	8.6E-04	3.8E-04	2.6E-04	3.6E-05	1.1E-03	7.0E-04	8.5E-05	7.8E-05	1.5E-04
Ditchwich Trencher (RT 120 Quad)	Backhoes/Graders	1	113	2	0.59	High LF	720	0.37	1.9E-02	2.1E-01	7.7E-02	2.7E-04	1.7E-02	1.7E-02	2.8E+01	2.3E-04	1.1E-03	2.8E+01	6.8E-04	1.6E-04	7.1E-05	4.9E-05	6.8E-06	2.0E-04	1.3E-04	1.6E-05	1.5E-05	2.9E-05
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	3.1E-02	3.9E-01	8.0E-02	4.8E-04	1.9E-02	1.8E-02	5.1E+01	4.2E-04	2.1E-03	5.1E+01	1.2E-03	2.9E-04	1.3E-04	9.0E-05	1.2E-05	3.7E-04	2.4E-04	2.9E-05	2.7E-05	5.3E-05
200 Ton Manitowoc Lattice	Cranes	2	340	2	0.43	Average LF	720	0.37	4.0E-02	1.0E+00	2.2E-01	1.2E-03	4.5E-02	4.4E-02	1.2E+02	9.9E-04	5.0E-03	1.2E+02	3.0E-03	7.0E-04	3.1E-04	2.1E-04	2.9E-05	8.9E-04	5.8E-04	6.9E-05	6.4E-05	1.3E-04
966 Loader w / bucket	Forklifts/Loaders	1	235	2	0.59	High LF	720	0.37																				
1600 CFM	Air Compressors/Drills	1	560	2	0.43	Average LF	720	0.37	3.3E-02	8.4E-01	1.8E-01	9.5E-04	3.7E-02	3.6E-02	1.0E+02	8.2E-04	4.1E-03	1.0E+02	2.4E-03	5.8E-04	2.5E-04	1.8E-04	2.4E-05	7.3E-04	4.7E-04	5.7E-05	5.2E-05	1.0E-04
APE D80-42 Diesel Hammer[d]	Air Compressors/Drills	--	--	--	--	--	--	--	1.1E-01	1.4E+00	3.1E-01	9.4E-02	1.0E-01	1.0E-01	5.3E+01	4.3E-04	2.1E-03	5.3E+01	1.3E-03	3.0E-04	1.3E-04	9.2E-05	1.3E-05	3.8E-04	2.5E-04	3.0E-05	2.7E-05	5.4E-05
APE 200-6 Vibratory Hammer	Air Compressors/Drills	2	765	2	0.43	Average LF	720	0.37	9.0E-02	2.2E+00	4.4E-01	2.6E-03	1.0E-01	9.8E-02	2.8E+02	2.2E-03	1.1E-02	2.8E+02	2.9E-03	1.3E-03	4.7E-04	3.3E-04	0.0E+00	1.3E-04	4.3E-05	1.3E-05	2.2E-04	3.6E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	16	13	2	0.43	Average LF	720	0.41	3.2E-02	3.2E-01	1.7E-01	3.9E-04	2.8E-02	2.7E-02	4.2E+01	3.4E-04	1.7E-03	4.2E+01	1.0E-03	2.4E-04	1.0E-04	7.3E-05	1.0E-05	3.0E-04	2.0E-04	2.4E-05	2.2E-05	4.3E-05
Stadium Light	Light Plants	2	18	2	0.43	Average LF	720	0.41	5.6E-03	5.5E-02	2.9E-02	6.8E-05	4.8E-03	4.7E-03	7.2E+00	5.8E-05	2.9E-04	7.2E+00	1.7E-04	4.1E-05	1.8E-05	1.3E-05	1.7E-06	5.2E-05	3.4E-05	4.1E-06	3.7E-06	7.4E-06
JLG Articulating Lift 60' - 79'	Aerial Work Platform	1	50	2	0.21	Low LF	720	0.48	7.2E-03	4.3E-02	5.6E-02	5.4E-05	5.8E-03	5.6E-03	5.8E+00	4.7E-05	2.3E-04	5.8E+00	1.4E-04	3.3E-05	1.4E-05	1.0E-05	1.4E-06	4.2E-05	2.7E-05	3.3E-06	3.0E-06	5.9E-06
400 amp Diesel	Welding	4	100	2	0.21	Low LF	720	0.43	5.3E-02	3.0E-01	1.6E-01	3.9E-04	3.5E-02	3.4E-02	4.2E+01	3.4E-04	1.7E-03	4.2E+01	1.0E-03	2.4E-04	1.0E-04	7.3E-05	1.0E-05	3.0E-04	2.0E-04	2.4E-05	2.2E-05	4.3E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	2	180	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.3E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
West Dock Upgrades - West Dock Ramp Installation																												
1 T. Flatbed	Tractors/Trailers	1	400	2	0.43	Average LF	720	0.37	2.4E-02	6.0E-01	1.3E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	1.7E-03	4.1E-04	1.8E-04	1.3E-04	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	2	525	2	0.59	High LF	720	0.37	8.9E-02	2.0E+00	7.0E-01	2.5E-03	1.2E-01	1.1E-01	2.6E+02	2.1E-03	1.1E-02	2.6E+02	6.4E-03	1.5E-03	6.6E-04	4.6E-04	6.3E-05	1.9E-03	1.2E-03	1.5E-04	1.4E-04	2.7E-04
Mechanic's Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Tire Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Lube Truck	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	1	260	2	0.59	High LF	720	0.37	4.1E-02	4.7E-01	1.5E-01	6.1E-04	2.9E-02	2.8E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
30 CY Maxi Haul End Dump[c]	Gravel Haul Equipment	4	600	2	0.59	High LF	720	0.37	2.0E-01	4.4E+00	2.5E+00	5.7E-03	2.7E-01	2.6E-01	6.0E+02	4.9E-03	2.4E-02	6.0E+02	1.5E-02	3.4E-03	1.5E-03	1.0E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.2E-04
D9 Dozer	Dozers	1	436	2	0.59	High LF	720	0.37	3.7E-02	8.5E-01	2.9E-01	1.0E-03	4.9E-02	4.7E-02	1.1E+02	8.8E-04	4.4E-03	1.1E+02	2.6E-03	6.2E-04	2.7E-04	1.9E-04	2.6E-05	7.9E-04	5.1E-04	6.2E-05	5.7E-05	1.1E-04
D10 Dozer	Dozers	1	600	2	0.59	High LF	720	0.37	5.1E-02	1.1E+00	6.3E-01	1.4E-03	6.7E-02	6.5E-02	1.5E+02	1.2E-03	6.1E-03	1.5E+02	3.6E-03	8.6E-04	3.8E-04	2.6E-04	3.6E-05	1.1E-03	7.0E-04	8.5E-05	7.8E-05	1.5E-04
324 Excavator	Backhoes/Graders	1	190	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.2E-03	2.7E-04	1.2E-04	8.3E-05	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
988 Loader w/ bucket	Forklifts/Loaders	1	500	2	0.59	High LF	720	0.37	4.2E-02	9.7E-01	3.3E-01	1.2E-03	5.6E-02	5.4E-02	1.2E+02	1.0E-03	5.1E-03	1.3E+02	3.0E-03	7.1E-04	3.1E-04	2.2E-04	3.0E-05	9.0E-04	5.9E-04	7.1E-05	6.5E-05	1.3E-04
966 Loader w/ bucket	Forklifts/Loaders	2	235	2	0.59	High LF	720	0.37	7.4E-02	8.4E-01	2.8E-01	1.1E-03	5.2E-02	5.1E-02	1.2E+02	9.5E-04	4.8E-03	1.2E+02	2.8E-03	6.7E-04	2.9E-04	2.0E-04	2.8E-05	8.5E-04	5.5E-04	6.7E-05	6.1E-05	1.2E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	10	13	2	0.43	Average LF	720	0.41	2.0E-02	2.0E-01	1.1E-01	2.5E-04	1.7E-02	1.7E-02	2.6E+01	2.1E-04	1.1E-03	2.6E+01	6.3E-04	1.5E-04	6.5E-05	4.5E-05	6.2E-06	1.9E-04	1.2E-04	1.5E-05	1.4E-05	2.7E-05
Generator, 80kw	Portable Generators	1	120	2	0.43	Average LF	720	0.37	1.4E-02	1.7E-01	3.9E-02	2.0E-04	1.1E-02	1.1E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	5.2E-04	1.2E-04	5.4E-05	3.8E-05	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Generator, 120kw	Portable Generators	2	180	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.3E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
CS56 Vibratory Roller	Misc. Equipment/Facilities	1	156	2	0.43	Average LF	720	0.37	1.9E-02	2.2E-01	5.1E-02	2.7E-04	1.4E-02	1.4E-02	2.8E+01	2.3E-04	1.1E-03	2.8E+01	6.8E-04	1.6E-04	7.0E-05	4.9E-05	6.7E-06	2.0E-04	1.3E-04	1.6E-05	1.5E-05	2.9E-05
Hand Compactor	Misc. Equipment/Facilities	2	13	2	0.21	Low LF	720	0.48	4.5E-03	2.1E-02	2.6E-02	2.8E-05	3.4E-03	3.3E-03	3.0E+00	2.4E-05	1.2E-04	3.0E+00	7.3E-05	1.7E-05	7.5E-06	5.2E-06	7.2E-07	2.2E-05	1.4E-05	1.7E-06	1.6E-06	3.1E-06
Module Transportation - Module Sealift and Offload																												
35 Ton RT	Cranes	1	139	2	0.43	Average LF	300	0.37	6.9E-03	8.2E-02	1.9E-02	9.9E-05	5.2E-03	5.1E-03	1.0E+01	8.5E-05	4.2E-04	1.0E+01	2.5E-04	6.0E-05	2.6E-05	1.8E-05	2.5E-06	7.5E-05	4.9E-05	5.9E-06	5.4E-06	1.1E-05
135 Ton RT (Grove RT9130E)	Cranes	1	285	2	0.43	Average LF	720	0.37	3.1E-02	3.9E-01	8.0E-02	4.8E-04	1.9E-02	1.8E-02	5.1E+01	4.2E-04	2.1E-03	5.1E+01	1.2E-03	2.9E-04	1.3E-04	9.0E-05	1.2E-05	3.7E-04	2.4E-04	2.9E-05	2.7E-05	5.3E-05
3 Ton Forklift	Forklifts/Loaders	4	49	2	0.59	High LF	600	0.41	2.3E-02	3.5E-01	2.0E-01	4.3E-04	4.7E-02	4.6E-02	4.5E+01	3.7E-04	1.8E-03	4.5E+01	1.1E-03	2.6E-04	1.1E-04	7.9E-05	1.1E-05	3.3E-04	2.1E-04	2.6E-05	2.4E-05	4.7E-05
15 Ton Forklift	Forklifts/Loaders	2	133	2	0.59	High LF	600	0.37	3.8E-02	4.1E-01	1.5E-01	5.2E-04	3.4E-02	3.3E-02	5.5E+01	4.5E-04	2.2E-03	5.5E+01	1.3E-03	3.2E-04	1.4E-04	9.7E-05	1.3E-05	4.0E-04	2.6E-04	3.1E-05	2.9E-05	5.7E-05
185 CFM	Air Compressors/Drills	8	55	2	0.43	Average LF	360	0.41	2.9E-02	3.6E-01	2.0E-01	4.2E-04	2.7E-02	2.6E-02	4.4E+01	3.6E-04	1.8E-03	4.4E+01	1.1E-03	2.5E-04	1.1E-04	7.7E-05	1.1E-05	3.2E-04	2.1E-04	2.5E-05	2.3E-05	4.5E-05
Maxlite - 7.5 KW (Magnum MLT4080)[e]	Light Plants	25	13	2	0.43	Average LF	720	0.41	5.0E-02	5.0E-01	2.6E-01	6.1E-04	4.4E-02	4.2E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
JLG Articulating Lift 60' - 79'	Aerial Work Platform	4	50	2	0.21	Low LF	360	0.48	1.4E-02	8.7E-02	1.1E-01	1.1E-04	1.2E-02	1.1E-02	1.2E+01	9.4E-05	4.7E-04	1.2E+01	2.8E-04	6.6E-05	2.9E-05	2.0E-05	2.8E-06	8.3E-05	5.4E-05	6.5E-06	6.0E-06	1.2E-05
JLG Articulating Lift 60' - 120'	Aerial Work Platform	1	50	2	0.21	Low LF	720	0.48	7.2E-03	4.3E-02	5.6E-02	5.4E-05	5.8E-03	5.6E-03	5.8E+00	4.7E-05	2.3E-04	5.8E+00	1.4E-04	3.3E-05	1.4E-05	1.0E-05	1.4E-06	4.2E-05	2.7E-05	3.3E-06	3.0E-06	5.9E-06
250-300 amp Diesel[e]	Welding	6	38	2	0.21	Low LF	720	0.48	2.5E-02	2.0E-01	1.6E-01	2.5E-04	3.7E-02	3.6E-02	2.6E+01	2.1E-04	1.1E-03	2.6E+01	6.4E-04	1.5E-04	6.6E-05	4.6E-05	6.3E-06	1.9E-04	1.2E-04	1.5E-05	1.4E-05	2.7E-05
Generator, 80kw	Portable Generators	6	120	2	0.43	Average LF	720	0.37	8.6E-02	1.0E+00	2.3E-01	1.2E-03	6.5E-02	6.3E-02	1.3E+02	1.1E-03	5.3E-03	1.3E+02	3.1E-03	7.4E-04	3.3E-04	2.3E-04	3.1E-05	9.4E-04	6.1E-04	7.4E-05	6.7E-05	1.3E-04
Generator, 120kw	Portable Generators	2	180	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.3E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	1.6E-03	3.7E-04	1.6E-04	1.1E-04	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
Power Pack Units	Misc. Equipment/Facilities	16	523	2	0.59	High LF	720	0.37	7.1E-01	1.6E+01	5.6E+00	2.0E-02	9.3E-01	9.1E-01	2.1E+03	1.7E-02	8.5E-02	2.1E+03	5.1E-02	1.2E-02	5.2E-03	3.6E-03	5.0E-04	1.5E-02	9.8E-03	1.

AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Miscellaneous Equipment: Emissions Calculations

					Emissions Rates (lb/MMBtu)[b]																
Equipment	Category	Hours/Month	Quantity	Fuel Consumption (gal/hr)[a]	VOC	Nox	CO	SO2	PM10	PM2.5[c]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Bridge Bypass Abutment Installation																						
APE D80-42 Diesel Hammer	Air Compressors/Drills	720	1	6.5	3.50E-01	4.41	0.95	0.29	0.31	0.31	1.63E+02	1.32E-03	6.61E-03	9.3E-04	4.1E-04	2.9E-04	3.9E-05	1.2E-03	7.7E-04	9.3E-05	8.5E-05	1.7E-04

[a] Fuel Consumption from manufacturer's specification

[b] Emission factors for criteria pollutants from AP-42 Section 3.3. Emission factors for GHGs from 40 CFR 98.33 Subpart C

[c] Assume $PM_{2.5}$ emission factor is 100% of PM_{10} emission factor

[d] Emission rate (tons/month) = Emission Rate (lb/MMBtu) * hours/month * quantity * fuel Consumption (gal/hr) * Heat Content (MMBtu/gal)/2000 (lb/ton)

[e] CO2e = CO2 + CH4 * 25 + N2O *2 98

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
North Slope Construction
Miscellaneous Equipment: Emissions Calculations

					Emissions Rates (tons/month)[d]																		
Equipment	Category	Hours/Month	Quantity	Fuel Consumption (gal/hr)[a]	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[e]	Total HAPs	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Bridge Bypass Abutment Installation																								
APE D80-42 Diesel Hammer	Air Compressors/Drills	720	1	6.5	1.1E-01	1.4E+00	3.1E-01	9.4E-02	1.0E-01	1.0E-01	5.3E+01	4.3E-04	2.1E-03	5.3E+01	1.3E-03	3.0E-04	1.3E-04	9.2E-05	1.3E-05	3.8E-04	2.5E-04	3.0E-05	2.7E-05	5.4E-05

[a] Fuel Consumption from manufacturer's specification

[b] Emission factors for criteria pollutants from AP-42 Section 3.3. Emission factors for GHGs from 40 CFR 98.33 Subpart C

[c] Assume $PM_{2.5}$ emission factor is 100% of PM_{10} emission factor

[d] Emission rate (tons/month) = Emission Rate (lb/MMBtu) * hours/month * quantity * fuel Consumption (gal/hr) * Heat Content (MMBtu/gal)/2000 (lb/ton)

[e] CO2e = CO2 + CH4 * 25 + N2O *2 98

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Onroad Equipment: Emissions Calculations

							Emissions Rates (g/mile) [a]																
Equipment	Category	MOVES Vehicle Category	Average Speed (mph)	Quantity	Miles/Month	Hours/Month	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Dredging																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	5	9000	360	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	9000	360	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	2.7E-04	3.3E-05	1.2E-04	2.7E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	9000	360	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
West Dock Upgrades - Bridge Bypass Abutment Installation																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	10	18000	720	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	18000	720	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	2.7E-04	3.3E-05	1.2E-04	2.7E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	18000	720	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
West Dock Upgrades - West Dock Ramp Installation																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	6	18000	720	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	18000	720	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	2.7E-04	3.3E-05	1.2E-04	2.7E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	18000	720	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
Module Transportation - Module Sealift and Offload																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	15	7500	300	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	4	3000	120	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
Module Transportation - Module Transport to GCF																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	15	7500	300	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	4	7500	300	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
North Slope Construction - Personnel and Material Transport to the North Slope																								
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	50	2500	100	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.3E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	30	2500	100	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	2.7E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	20	2500	100	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	3	2500	100	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	1.9E-02	3.5E-03	4.7E-03	7.7E-03

[a] Emission rates are calculated based on an average of winter and summer emissions rates from the EPA MOVES Model for the North Slope Borough, using default fuel formulation, meteorology, fuel type mixture, and age distribution for 2016.

[b] Emission Rate (tons/month) = Emission Rate (g/mile) * quantity * Miles/month / 453.6 (lb/g) / 2000 (lb/ton)

[c] CO2e = CO2 + CH4 * 25 + N2O *2 98

2016 Efs conservatively used to estimate emissions for all project years.

All North Slope roads assumed to be Rural Unrestricted road type.

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Onroad Equipment: Emissions Calculations

							Emissions Rates (tons/month)[b]																	
Equipment	Category	MOVES Vehicle Category	Average Speed (mph)	Quantity	Miles/Month	Hours/Month	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[c]	Total HAPs	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
West Dock Upgrades - Dredging																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	5	9000	360	1.1E-02	4.2E-02	4.5E-01	3.9E-04	5.6E-03	3.9E-03	2.3E+01	3.0E-04	6.0E-04	2.3E+01	2.6E-03	5.2E-04	1.0E-03	8.2E-04	3.8E-05	1.4E-04	6.4E-05	8.6E-06	2.8E-05	4.5E-05
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	9000	360	5.3E-04	2.6E-03	4.4E-02	5.9E-05	6.7E-04	4.4E-04	3.3E+00	1.9E-05	5.4E-05	3.3E+00	1.3E-04	2.5E-05	4.8E-05	3.9E-05	1.8E-06	5.5E-06	2.6E-06	3.3E-07	1.2E-06	2.7E-06
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	9000	360	1.0E-02	1.6E-01	1.2E-01	1.6E-04	1.0E-02	8.8E-03	2.2E+01	1.3E-04	5.7E-04	2.2E+01	1.7E-03	9.5E-05	7.8E-05	7.0E-05	3.0E-05	8.5E-04	3.7E-04	6.9E-05	9.3E-05	1.5E-04
West Dock Upgrades - Bridge Bypass Abutment Installation																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	10	18000	720	4.5E-02	1.7E-01	1.8E+00	1.6E-03	2.2E-02	1.5E-02	9.1E+01	1.2E-03	2.4E-03	9.1E+01	1.1E-02	2.1E-03	4.0E-03	3.3E-03	1.5E-04	5.5E-04	2.6E-04	3.4E-05	1.1E-04	1.8E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	18000	720	1.1E-03	5.3E-03	8.8E-02	1.2E-04	1.3E-03	8.9E-04	6.7E+00	3.8E-05	1.1E-04	6.7E+00	2.5E-04	5.0E-05	9.7E-05	7.9E-05	3.6E-06	1.1E-05	5.3E-06	6.5E-07	2.4E-06	5.4E-06
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	18000	720	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	3.4E-03	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	7.5E-04	1.4E-04	1.9E-04	3.1E-04
West Dock Upgrades - West Dock Ramp Installation																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	6	18000	720	2.7E-02	1.0E-01	1.1E+00	9.5E-04	1.3E-02	9.3E-03	5.4E+01	7.3E-04	1.4E-03	5.5E+01	6.4E-03	1.2E-03	2.4E-03	2.0E-03	9.0E-05	3.3E-04	1.5E-04	2.1E-05	6.6E-05	1.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	1	18000	720	1.1E-03	5.3E-03	8.8E-02	1.2E-04	1.3E-03	8.9E-04	6.7E+00	3.8E-05	1.1E-04	6.7E+00	2.5E-04	5.0E-05	9.7E-05	7.9E-05	3.6E-06	1.1E-05	5.3E-06	6.5E-07	2.4E-06	5.4E-06
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	2	18000	720	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	3.4E-03	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	7.5E-04	1.4E-04	1.9E-04	3.1E-04
Module Transportation - Module Sealift and Offload																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	15	7500	300	2.8E-02	1.1E-01	1.1E+00	9.9E-04	1.4E-02	9.7E-03	5.7E+01	7.6E-04	1.5E-03	5.7E+01	6.6E-03	1.3E-03	2.5E-03	2.1E-03	9.4E-05	3.4E-04	1.6E-04	2.2E-05	6.9E-05	1.1E-04
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	4	3000	120	7.0E-03	1.1E-01	8.1E-02	1.1E-04	6.8E-03	5.9E-03	1.5E+01	8.6E-05	3.8E-04	1.5E+01	1.1E-03	6.3E-05	5.2E-05	4.7E-05	2.0E-05	5.6E-04	2.5E-04	4.6E-05	6.2E-05	1.0E-04
Module Transportation - Module Transport to GCF																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	15	7500	300	2.8E-02	1.1E-01	1.1E+00	9.9E-04	1.4E-02	9.7E-03	5.7E+01	7.6E-04	1.5E-03	5.7E+01	6.6E-03	1.3E-03	2.5E-03	2.1E-03	9.4E-05	3.4E-04	1.6E-04	2.2E-05	6.9E-05	1.1E-04
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	4	7500	300	1.7E-02	2.7E-01	2.0E-01	2.6E-04	1.7E-02	1.5E-02	3.7E+01	2.1E-04	9.5E-04	3.7E+01	2.9E-03	1.6E-04	1.3E-04	1.2E-04	5.0E-05	1.4E-03	6.2E-04	1.1E-04	1.6E-04	2.5E-04
North Slope Construction - Personnel and Material Transport to the North Slope																										
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	25	50	2500	100	3.1E-02	1.2E-01	1.2E+00	1.1E-03	1.5E-02	1.1E-02	6.3E+01	8.4E-04	1.7E-03	6.3E+01	7.4E-03	1.4E-03	2.8E-03	2.3E-03	1.0E-04	3.8E-04	1.8E-04	2.4E-05	7.7E-05	1.3E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	25	30	2500	100	4.5E-03	2.2E-02	3.7E-01	4.9E-04	5.6E-03	3.7E-03	2.8E+01	1.6E-04	4.5E-04	2.8E+01	1.0E-03	2.1E-04	4.0E-04	3.3E-04	1.5E-05	4.6E-05	2.2E-05	2.7E-06	1.0E-05	2.3E-05
9-15 Passenger Van	Pickup Trucks/Buses	Transit Bus	25	20	2500	100	2.9E-02	4.6E-01	3.4E-01	4.4E-04	2.8E-02	2.4E-02	6.1E+01	3.6E-04	1.6E-03	6.1E+01	4.8E-03	2.6E-04	2.2E-04	2.0E-04	8.3E-05	2.4E-03	1.0E-03	1.9E-04	2.6E-04	4.2E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	25	3	2500	100	4.3E-03	6.8E-02	5.1E-02	6.6E-05	4.2E-03	3.7E-03	9.2E+00	5.4E-05	2.4E-04	9.2E+00	7.1E-04	4.0E-05	3.2E-05	2.9E-05	1.2E-05	3.5E-04	1.6E-04	2.9E-05	3.9E-05	6.4E-05

[a] Emission rates are calculated based on an average of winter and summer emissions rates from the EPA MOVES Model for the North Slope Borough, using default fuel formulation, meteorology, fuel type mixture, and age distribution for 2016.

[b] Emission Rate (tons/month) = Emission Rate (g/mile) * quantity * Miles/month / 453.6 (lb/g) / 2000 (lb/ton)

[c] CO2e = CO2 + CH4 * 25 + N2O *2 98

2016 Efs conservatively used to estimate emissions for all project years.

All North Slope roads assumed to be Rural Unrestricted road type.

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Marine Equipment: Emissions Calculations

										Emissions Rates (g/hp-hr)[c, d]																
Equipment	bhp[a]	Kw	Quantity	Category	Tier Level	Load Factor [b]	Transient Adjustment Factor	Hours/Month	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5[e]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Module Transportation - Module Sealift and Offload																											
Ocean Tug	7200	5369	23	2	2	0.85	Average LF	720	0.37	0.37	7.31	3.73	0.97	0.54	0.52	515	1.5E-02	6.7E-02	2.5E-03	9.1E-04	6.2E-04	9.0E-03	2.6E-04	8.2E-05	2.5E-05	4.2E-04	6.9E-04
Offload Assist Tugs	1450	1081	6	1	2	0.79	Average LF	720	0.37	0.20	5.07	3.73	0.97	0.22	0.22	515	1.5E-02	6.7E-02	2.5E-03	9.1E-04	6.2E-04	9.0E-03	2.6E-04	8.2E-05	2.5E-05	4.2E-04	6.9E-04

[a] HP from ASAP Construction Equipment Rev B (7-15-2014) spreadsheet provided by Fluor

[b] Equipment load factors from Table 3-3 EPA Load Factors for Harbor Craft in April 2009 *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories*

[c] Emission factors for criteria pollutants and GHG from Table 3-8: Harbor Craft Emission Factors in *April 2009 Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* [Please refer to the Marine Equipment Tab]

[d] Emission factors for HAPs from AP-42 Section 3.4

[e] Assume $PM_{2.5}$ emission factor is 97% of PM_{10} emission factor

[f] CO2e = CO2 + CH4 * 25 + N2O *2 98

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

North Slope Construction

Marine Equipment: Emissions Calculations

										Emissions Rates (tons/month)[c, d]																		
Equipment	bhp[a]	Kw	Quantity	Category	Tier Level	Load Factor [b]	Transient Adjustment Factor	Hours/Month	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Module Transportation - Module Sealift and Offload																													
Ocean Tug	7200	5369	23	2	2	0.85	Average LF	720	0.37	4.9E+01	9.6E+02	4.9E+02	1.3E+02	7.1E+01	6.8E+01	6.8E+04	2.0E+00	8.8E+00	6.8E+04	1.9E+00	3.3E-01	1.2E-01	8.2E-02	1.2E+00	3.4E-02	1.1E-02	3.4E-03	5.5E-02	9.0E-02
Offload Assist Tugs	1450	1081	6	1	2	0.79	Average LF	720	0.37	1.4E+00	3.5E+01	2.6E+01	6.7E+00	1.5E+00	1.5E+00	3.6E+03	1.0E-01	4.6E-01	3.6E+03	9.7E-02	1.7E-02	6.3E-03	4.3E-03	6.2E-02	1.8E-03	5.6E-04	1.8E-04	2.9E-03	4.7E-03

[a] HP from ASAP Construction Equipment Rev B (7-15-2014) spreadsheet provided by Fluor

[b] Equipment load factors from Table 3-3 EPA Load Factors for Harbor Craft in April 2009 *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories*

[c] Emission factors for criteria pollutants and GHG from Table 3-8: Harbor Craft Emission Factors in *April 2009 Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* [Please refer to the Marine Equipment Tab]

[d] Emission factors for HAPs from AP-42 Section 3.4

[e] Assume $PM_{2.5}$ emission factor is 97% of PM_{10} emission factor

[f] CO2e = CO2 + CH4 * 25 + N2O *2 98

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
Pipeline Construction
Emissions Summary Outside of Non-Attainment Area

	Yr 0 Emissions (tons)										
Spread 1	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	75.4	24.6	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	163	16.3	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	2,668	267	-	-	-	-	-
NonRoad Equipment	841	18,220	6,362	22.1	982	978	2,337,502	18.9	94.8	2,345,515	56.7
Onroad Equipment	3.64	16.2	138	0.12	1.90	1.35	7,325	0.094	0.19	7,358	0.84
TOTAL	**845**	**18,236**	**6,500**	**22.2**	**3,891**	**1,287**	**2,344,826**	**19.0**	**95.0**	**2,352,872**	**57.6**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 1 Emissions (tons)										
Spread 1	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	82.1	25.3	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	163	16.3	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	4,446	445	-	-	-	-	-
NonRoad Equipment	1,556	33,707	11,771	40.9	1,817	1,809	4,324,378	35.0	175	4,339,202	105
Onroad Equipment	6.74	29.9	255	0.23	3.51	2.51	13,551	0.175	0.36	13,612	1.55
TOTAL	**1,563**	**33,737**	**12,026**	**41.1**	**6,512**	**2,298**	**4,337,929**	**35.2**	**176**	**4,352,814**	**107**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 2 Emissions (tons)										
Spread 1	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[a]	-	-	-	-	76.9	24.7	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	163	16.3	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	2,174	217	-	-	-	-	-
NonRoad Equipment	1,009	21,864	7,635	26.5	1,178	1,174	2,805,002	22.7	114	2,814,618	68.1
Onroad Equipment	4.37	19.4	166	0.15	2.28	1.63	8,790	0.11	0.23	8,829	1.01
TOTAL	**1,014**	**21,884**	**7,801**	**26.7**	**3,595**	**1,434**	**2,813,792**	**22.8**	**114**	**2,823,447**	**69.1**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
Pipeline Construction
Emissions Summary Outside of Non-Attainment Area

	Yr 0 Emissions (tons)										
Spread 2	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	74.2	24.4	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	169	16.9	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	2,174	217	-	-	-	-	-
NonRoad Equipment	715	15,487	5,408	18.8	835	831	1,986,876	16.1	80.6	1,993,687	48.2
Onroad Equipment	3.10	13.8	117	0.10	1.61	1.15	6,226	0.080	0.16	6,254	0.71
TOTAL	**718**	**15,501**	**5,525**	**18.9**	**3,253**	**1,091**	**1,993,102**	**16.2**	**80.8**	**1,999,941**	**48.9**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 1 Emissions (tons)										
Spread 2	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	80.7	25.2	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	169	16.9	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	3,854	385	-	-	-	-	-
NonRoad Equipment	1,409	30,519	10,657	37.0	1,645	1,638	3,915,315	31.7	158.8	3,928,737	95.1
Onroad Equipment	6.11	27.1	231	0.21	3.18	2.27	12,269	0.158	0.32	12,324	1.40
TOTAL	**1,415**	**30,546**	**10,888**	**37.2**	**5,751**	**2,068**	**3,927,584**	**31.9**	**159.1**	**3,941,061**	**96.5**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 2 Emissions (tons)										
Spread 2	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	73.2	24.3	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	169	16.9	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	1,779	178	-	-	-	-	-
NonRoad Equipment	610	13,210	4,613	16.0	712	709	1,694,689	13.7	68.7	1,700,498	41.1
Onroad Equipment	2.64	11.7	100	0.089	1.38	0.98	5,310	0.068	0.14	5,334	0.61
TOTAL	**613**	**13,221**	**4,713**	**16.1**	**2,734**	**929**	**1,699,999**	**13.8**	**68.9**	**1,705,832**	**41.7**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
Pipeline Construction
Emissions Summary Outside of Non-Attainment Area

	Yr 0 Emissions (tons)										
Spread 3	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	70.1	23.9	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	180	18.0	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	988	99	-	-	-	-	-
NonRoad Equipment	273	5,922	2,068	7.2	319	318	759,688	6.15	30.8	762,292	18.4
Onroad Equipment	1.18	5.26	44.8	0.040	0.62	0.44	2,381	0.031	0.063	2,391	0.27
TOTAL	**275**	**5,927**	**2,113**	**7.2**	**1,557**	**459**	**762,069**	**6.18**	**30.9**	**764,684**	**18.7**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 1 Emissions (tons)										
Spread 3	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	82.8	25.4	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	180	18.0	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	5,336	534	-	-	-	-	-
NonRoad Equipment	1,640	35,530	12,407	43.1	1,915	1,907	4,558,128	36.9	185	4,573,754	111
Onroad Equipment	7.11	31.6	269	0.24	3.70	2.64	14,283	0.18	0.38	14,347	1.63
TOTAL	**1,647**	**35,561**	**12,676**	**43.3**	**7,517**	**2,487**	**4,572,411**	**37.1**	**185**	**4,588,101**	**112**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 2 Emissions (tons)										
Spread 3	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	75.8	24.6	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	180	18.0	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	1,877	188	-	-	-	-	-
NonRoad Equipment	883	19,131	6,681	23.2	1,031	1,027	2,454,377	19.9	99.6	2,462,790	59.6
Onroad Equipment	3.83	17.0	145	0.13	1.99	1.42	7,691	0.099	0.20	7,725	0.88
TOTAL	**887**	**19,148**	**6,825**	**23.3**	**3,166**	**1,259**	**2,462,068**	**20.0**	**99.8**	**2,470,516**	**60.5**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
Pipeline Construction
Emissions Summary Outside of Non-Attainment Area

	Yr 0 Emissions (tons)										
Spread 4	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	62.7	20.5	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	171	17.1	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	2,273	227	-	-	-	-	-
NonRoad Equipment	694	15,032	5,249	18.2	810	807	1,928,439	15.6	78.2	1,935,050	46.8
Onroad Equipment	3.01	13.4	114	0.10	1.57	1.12	6,043	0.078	0.16	6,070	0.69
TOTAL	**697**	**15,045**	**5,363**	**18.3**	**3,318**	**1,073**	**1,934,482**	**15.7**	**78.4**	**1,941,120**	**47.5**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 1 Emissions (tons)										
Spread 4	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	78.7	25.0	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	205	20.5	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	3,557	356	-	-	-	-	-
NonRoad Equipment	1,199	25,964	9,067	31.5	1,399	1,394	3,330,940	27.0	135	3,342,358	80.9
Onroad Equipment	5.19	23.1	197	0.18	2.70	1.93	10,438	0.13	0.27	10,485	1.19
TOTAL	**1,204**	**25,987**	**9,263**	**31.7**	**5,243**	**1,797**	**3,341,377**	**27.1**	**135**	**3,352,843**	**82.1**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

	Yr 2 Emissions (tons)										
Spread 4	**VOC**	**No_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**
Gravel Handling Operations[(a)]	-	-	-	-	74.0	24.4	-	-	-	-	-
Site Disturbance and Fugitive Dust[(a)]	-	-	-	-	205	20.5	-	-	-	-	-
Onroad Fugitive Emissions	-	-	-	-	1,482	148	-	-	-	-	-
NonRoad Equipment	694	15,032	5,249	18.2	810	807	1,928,439	15.6	78.2	1,935,050	46.8
Onroad Equipment	3.01	13.4	114	0.10	1.57	1.12	6,043	0.078	0.16	6,070	0.69
TOTAL	**697**	**15,045**	**5,363**	**18.3**	**2,573**	**1,001**	**1,934,482**	**15.7**	**78.4**	**1,941,120**	**47.5**

Note:

[(a)]Assume that stock pile and fugitive dust emissions occur only during the summer months

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Pipeline Construction

Spread Construction Activity for Outside PM $_{2.5}$ Non-Attainment Area

	Number of 200-person module camp months					
	Yr 0		Yr 1		Yr 2	
	Winter Months	Summer Months	Winter Months	Summer Months	Winter Months	Summer Months
Spread 1	13	27	29	45	26	22
Spread 2	12	22	28	39	11	18
Spread 3	3	10	24	54	23	19
Spread 4	10	23	21	36	18	15

Note:

This table is based on the information provided in the "Updated Camp Chart" worksheet (see Camp Activity tab). Total = # of 200 person modules * months in operation).

	Number of Months Operational					
	Yr 0		Yr 1		Yr 2	
	Winter Months	Summer Months	Winter Months	Summer Months	Winter Months	Summer Months
Spread 1	2	6	6	6	6	6
Spread 2	0	6	6	6	6	6
Spread 3	0	6	6	6	6	6
Spread 4	0	5	6	6	6	6

Note:

This table is based on the information provided in the "Updated Camp Chart" worksheet (see Camp Activity tab). Total = # of 200 person modules * months in operation).

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
Construction Camps and Storage Yards
Indirect Emissions Summary by Year for areas outside the PM $_{2.5}$ NAA

	Emissions (tons)																		
Yr 0	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Pipe Haul Truck Trips	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fuel Truck Trips	1.0E+00	2.7E+01	6.7E+00	3.8E-02	1.6E+03	1.6E+02	5.1E+03	5.1E-03	7.9E-02	5.1E+03	1.7E-01	8.4E-03	5.8E-03	5.8E-03	2.9E-03	8.9E-02	3.9E-02	7.1E-03	9.6E-03	1.6E-02
Refuse Truck Trips	1.9E-02	5.0E-01	1.2E-01	7.1E-04	3.0E+01	3.1E+00	9.4E+01	9.6E-05	1.5E-03	9.4E+01	3.2E-03	1.6E-04	1.1E-04	1.1E-04	5.4E-05	1.7E-03	7.2E-04	1.3E-04	1.8E-04	2.9E-04
Supply Truck Trips	2.0E-01	5.1E+00	1.3E+00	7.2E-03	2.9E+02	3.0E+01	9.5E+02	9.7E-04	1.5E-02	9.5E+02	3.3E-02	1.6E-03	1.1E-03	1.1E-03	5.5E-04	1.7E-02	7.3E-03	1.3E-03	1.8E-03	2.9E-03
Pipe Rail Transport	2.7E+01	4.5E+02	8.5E+01	1.0E+01	1.8E+01	1.8E+01	3.3E+04	2.6E-01	1.3E+00	3.3E+04	3.2E-01	1.6E-01	5.6E-02	3.9E-02	-	1.6E-02	5.0E-03	1.6E-03	2.6E-02	4.2E-02
ANNUAL TOTAL	**2.8E+01**	**4.8E+02**	**9.3E+01**	**1.0E+01**	**2.0E+03**	**2.1E+02**	**3.9E+04**	**2.7E-01**	**1.4E+00**	**3.9E+04**	**5.2E-01**	**1.7E-01**	**6.3E-02**	**4.6E-02**	**3.5E-03**	**1.2E-01**	**5.2E-02**	**1.0E-02**	**3.8E-02**	**6.1E-02**

	Emissions (tons)																		
Yr 1	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Pipe Haul Truck Trips	2.3E+00	5.9E+01	1.5E+01	8.3E-02	3.4E+03	3.5E+02	1.1E+04	1.1E-02	1.7E-01	1.1E+04	3.8E-01	1.8E-02	1.3E-02	1.3E-02	6.4E-03	1.9E-01	8.5E-02	1.5E-02	2.1E-02	3.4E-02
Fuel Truck Trips	4.3E-01	1.1E+01	2.8E+00	1.6E-02	6.8E+02	6.8E+01	2.1E+03	2.1E-03	3.3E-02	2.1E+03	7.2E-02	3.5E-03	2.4E-03	2.4E-03	1.2E-03	3.7E-02	1.6E-02	2.9E-03	4.0E-03	6.5E-03
Refuse Truck Trips	8.5E-03	2.2E-01	5.5E-02	3.1E-04	1.3E+01	1.3E+00	4.1E+01	4.2E-05	6.4E-04	4.1E+01	1.4E-03	6.9E-05	4.8E-05	4.7E-05	2.4E-05	7.3E-04	3.2E-04	5.8E-05	7.8E-05	1.3E-04
Supply Truck Trips	9.7E-02	2.5E+00	6.3E-01	3.6E-03	1.5E+02	1.5E+01	4.7E+02	4.8E-04	7.4E-03	4.7E+02	1.6E-02	7.9E-04	5.5E-04	5.4E-04	2.7E-04	8.3E-03	3.6E-03	6.6E-04	9.0E-04	1.5E-03
Pipe Rail Transport	2.6E+02	4.4E+03	8.3E+02	9.9E+01	1.8E+02	1.7E+02	3.2E+05	2.6E+00	1.3E+01	3.2E+05	3.2E+00	1.5E+00	5.5E-01	3.8E-01	-	1.5E-01	4.9E-02	1.5E-02	2.5E-01	4.2E-01
ANNUAL TOTAL	**2.7E+02**	**4.5E+03**	**8.5E+02**	**9.9E+01**	**4.4E+03**	**6.0E+02**	**3.3E+05**	**2.6E+00**	**1.3E+01**	**3.3E+05**	**3.6E+00**	**1.5E+00**	**5.7E-01**	**3.9E-01**	**7.9E-03**	**4.0E-01**	**1.5E-01**	**3.5E-02**	**2.8E-01**	**4.6E-01**

	Emissions (tons)																		
Yr 2	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Pipe Haul Truck Trips	9.7E-01	2.5E+01	6.3E+00	3.5E-02	1.5E+03	1.5E+02	4.7E+03	4.8E-03	7.4E-02	4.7E+03	1.6E-01	7.9E-03	5.5E-03	5.4E-03	2.7E-03	8.3E-02	3.6E-02	6.6E-03	9.0E-03	1.5E-02
Fuel Truck Trips	1.4E+00	3.6E+01	8.9E+00	5.0E-02	2.2E+03	2.2E+02	6.7E+03	6.8E-03	1.0E-01	6.7E+03	2.3E-01	1.1E-02	7.7E-03	7.6E-03	3.9E-03	1.2E-01	5.1E-02	9.4E-03	1.3E-02	2.1E-02
Refuse Truck Trips	2.4E-02	6.1E-01	1.5E-01	8.6E-04	3.7E+01	3.7E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.6E-05	2.0E-03	8.8E-04	1.6E-04	2.2E-04	3.6E-04
Supply Truck Trips	2.9E-01	7.5E+00	1.9E+00	1.1E-02	4.3E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.1E-04	2.5E-02	1.1E-02	2.0E-03	2.7E-03	4.3E-03
Pipe Rail Transport	3.9E+01	6.5E+02	1.2E+02	1.5E+01	2.6E+01	2.6E+01	4.7E+04	3.8E-01	1.9E+00	4.7E+04	4.6E-01	2.3E-01	8.1E-02	5.6E-02	-	2.3E-02	7.3E-03	2.3E-03	3.8E-02	6.1E-02
ANNUAL TOTAL	**4.2E+01**	**7.2E+02**	**1.4E+02**	**1.5E+01**	**4.1E+03**	**4.4E+02**	**6.0E+04**	**4.0E-01**	**2.1E+00**	**6.0E+04**	**9.0E-01**	**2.5E-01**	**9.6E-02**	**7.1E-02**	**7.4E-03**	**2.5E-01**	**1.1E-01**	**2.0E-02**	**6.2E-02**	**1.0E-01**

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Rail Delivery Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Destination	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$[(a)]**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Fairbanks	Monthly	2.5E+01	4.2E+02	7.9E+01	9.4E+00	1.7E+01	1.6E+01	3.0E+04	2.5E-01	1.2E+00	3.0E+04	2.9E-01	1.4E-01	5.2E-02	3.6E-02	1.5E-02	4.7E-03	1.5E-03	2.4E-02	3.9E-02
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	2.6E+01	4.3E+02	8.1E+01	9.6E+00	1.7E+01	1.7E+01	3.1E+04	2.5E-01	1.3E+00	3.1E+04	3.0E-01	1.5E-01	5.4E-02	3.7E-02	1.5E-02	4.8E-03	1.5E-03	2.5E-02	4.0E-02
	1	1.7E+02	2.8E+03	5.4E+02	6.4E+01	1.2E+02	1.1E+02	2.1E+05	1.7E+00	8.4E+00	2.1E+05	2.0E+00	9.9E-01	3.6E-01	2.5E-01	1.0E-01	3.2E-02	1.0E-02	1.7E-01	2.7E-01
	2	3.9E+01	6.5E+02	1.2E+02	1.5E+01	2.6E+01	2.6E+01	4.7E+04	3.8E-01	1.9E+00	4.7E+04	4.6E-01	2.3E-01	8.1E-02	5.6E-02	2.3E-02	7.3E-03	2.3E-03	3.8E-02	6.1E-02
	Rolling Annual	1.7E+02	2.9E+03	5.5E+02	6.5E+01	1.2E+02	1.1E+02	2.1E+05	1.7E+00	8.5E+00	2.1E+05	2.0E+00	1.0E+00	3.6E-01	2.5E-01	1.0E-01	3.2E-02	1.0E-02	1.7E-01	2.7E-01
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	8.8E+01	1.5E+03	2.8E+02	3.3E+01	5.9E+01	5.8E+01	1.1E+05	8.7E-01	4.3E+00	1.1E+05	1.0E+00	5.1E-01	1.8E-01	1.3E-01	5.2E-02	1.6E-02	5.2E-03	8.5E-02	1.4E-01
	S1.5	8.4E+01	1.4E+03	2.7E+02	3.2E+01	5.7E+01	5.5E+01	1.0E+05	8.3E-01	4.1E+00	1.0E+05	9.8E-01	4.9E-01	1.8E-01	1.2E-01	4.9E-02	1.6E-02	4.9E-03	8.1E-02	1.3E-01
	W2	5.9E+01	9.9E+02	1.9E+02	2.2E+01	4.0E+01	3.9E+01	7.2E+04	5.9E-01	2.9E+00	7.2E+04	7.0E-01	3.4E-01	1.2E-01	8.6E-02	3.5E-02	1.1E-02	3.5E-03	5.8E-02	9.4E-02
	S2.5	3.7E+00	6.3E+01	1.2E+01	1.4E+00	2.5E+00	2.5E+00	4.5E+03	3.7E-02	1.8E-01	4.6E+03	4.4E-02	2.2E-02	7.8E-03	5.4E-03	2.2E-03	7.0E-04	2.2E-04	3.6E-03	5.9E-03
Dunbar	Monthly	1.1E+01	1.8E+02	3.4E+01	4.1E+00	7.4E+00	7.1E+00	1.3E+04	1.1E-01	5.4E-01	1.3E+04	1.4E-01	6.3E-02	2.3E-02	1.6E-02	6.4E-03	2.0E-03	6.4E-04	1.1E-02	1.7E-02
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	1.2E+00	2.1E+01	3.9E+00	4.7E-01	8.4E-01	8.2E-01	1.5E+03	1.2E-02	6.1E-02	1.5E+03	1.6E-02	7.2E-03	2.6E-03	1.8E-03	7.3E-04	2.3E-04	7.3E-05	1.2E-03	2.0E-03
	1	6.4E+01	1.1E+03	2.0E+02	2.4E+01	4.3E+01	4.2E+01	7.8E+04	6.3E-01	3.2E+00	7.8E+04	8.1E-01	3.7E-01	1.3E-01	9.2E-02	3.8E-02	1.2E-02	3.8E-03	6.2E-02	1.0E-01
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	6.4E+01	1.1E+03	2.0E+02	2.4E+01	4.3E+01	4.2E+01	7.8E+04	6.3E-01	3.2E+00	7.8E+04	8.1E-01	3.7E-01	1.3E-01	9.2E-02	3.8E-02	1.2E-02	3.8E-03	6.2E-02	1.0E-01
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	4.1E+01	6.9E+02	1.3E+02	1.5E+01	2.8E+01	2.7E+01	5.0E+04	4.1E-01	2.0E+00	5.0E+04	5.2E-01	2.4E-01	8.6E-02	5.9E-02	2.4E-02	7.7E-03	2.4E-03	4.0E-02	6.5E-02
	S1.5	1.1E+01	1.9E+02	3.6E+01	4.3E+00	7.6E+00	7.4E+00	1.4E+04	1.1E-01	5.6E-01	1.4E+04	1.4E-01	6.5E-02	2.4E-02	1.6E-02	6.6E-03	2.1E-03	6.6E-04	1.1E-02	1.8E-02
	W2	1.3E+01	2.1E+02	4.0E+01	4.8E+00	8.6E+00	8.3E+00	1.5E+04	1.3E-01	6.3E-01	1.6E+04	1.6E-01	7.4E-02	2.7E-02	1.8E-02	7.5E-03	2.4E-03	7.5E-04	1.2E-02	2.0E-02
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anchorage	Monthly	6.6E+00	1.1E+02	2.1E+01	2.5E+00	4.5E+00	4.3E+00	8.0E+03	6.5E-02	3.2E-01	8.0E+03	8.4E-02	3.8E-02	1.4E-02	9.5E-03	3.9E-03	1.2E-03	3.9E-04	6.4E-03	1.0E-02
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.9E+01	4.8E+02	9.1E+01	1.1E+01	1.9E+01	1.9E+01	3.5E+04	2.8E-01	1.4E+00	3.5E+04	3.7E-01	1.7E-01	6.0E-02	4.1E-02	1.7E-02	5.4E-03	1.7E-03	2.8E-02	4.5E-02
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	2.9E+01	4.8E+02	9.1E+01	1.1E+01	1.9E+01	1.9E+01	3.5E+04	2.8E-01	1.4E+00	3.5E+04	3.7E-01	1.7E-01	6.0E-02	4.1E-02	1.7E-02	5.4E-03	1.7E-03	2.8E-02	4.5E-02
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	1.8E+01	3.1E+02	5.8E+01	6.9E+00	1.2E+01	1.2E+01	2.2E+04	1.8E-01	9.0E-01	2.2E+04	2.3E-01	1.1E-01	3.8E-02	2.6E-02	1.1E-02	3.4E-03	1.1E-03	1.8E-02	2.9E-02
	S1.5	7.1E+00	1.2E+02	2.3E+01	2.7E+00	4.8E+00	4.7E+00	8.6E+03	7.0E-02	3.5E-01	8.7E+03	9.0E-02	4.1E-02	1.5E-02	1.0E-02	4.2E-03	1.3E-03	4.2E-04	6.9E-03	1.1E-02
	W2	3.3E+00	5.5E+01	1.1E+01	1.2E+00	2.2E+00	2.2E+00	4.0E+03	3.3E-02	1.6E-01	4.0E+03	4.2E-02	1.9E-02	6.9E-03	4.8E-03	1.9E-03	6.2E-04	1.9E-04	3.2E-03	5.2E-03
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

[(a)] $PM_{2.5}$ is assumed to be 97% of PM_{10}

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prudhoe Bay	Monthly	5.6E-02	1.5E+00	3.6E-01	2.1E-03	8.5E+01	8.6E+00	2.7E+02	2.8E-04	4.3E-03	2.7E+02	9.4E-03	4.6E-04	3.2E-04	3.1E-04	1.6E-04	4.8E-03	2.1E-03	3.8E-04	5.2E-04	8.5E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	7.4E-02	1.9E+00	4.8E-01	2.7E-03	1.1E+02	1.1E+01	3.6E+02	3.7E-04	5.6E-03	3.6E+02	1.2E-02	6.0E-04	4.1E-04	4.1E-04	2.1E-04	6.3E-03	2.8E-03	5.0E-04	6.8E-04	1.1E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	7.4E-02	1.9E+00	4.8E-01	2.7E-03	1.1E+02	1.1E+01	3.6E+02	3.7E-04	5.6E-03	3.6E+02	1.2E-02	6.0E-04	4.1E-04	4.1E-04	2.1E-04	6.3E-03	2.8E-03	5.0E-04	6.8E-04	1.1E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	7.4E-02	1.9E+00	4.8E-01	2.7E-03	1.1E+02	1.1E+01	3.6E+02	3.7E-04	5.6E-03	3.6E+02	1.2E-02	6.0E-04	4.1E-04	4.1E-04	2.1E-04	6.3E-03	2.8E-03	5.0E-04	6.8E-04	1.1E-03
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Franklin Bluffs	Monthly	1.2E-01	3.3E+00	8.0E-01	4.5E-03	1.9E+02	1.9E+01	6.0E+02	6.2E-04	9.4E-03	6.0E+02	2.1E-02	1.0E-03	7.0E-04	6.9E-04	3.5E-04	1.1E-02	4.6E-03	8.4E-04	1.2E-03	1.9E-03
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	4.9E-01	1.3E+01	3.1E+00	1.8E-02	7.4E+02	7.4E+01	2.4E+03	2.4E-03	3.7E-02	2.4E+03	8.1E-02	3.9E-03	2.7E-03	2.7E-03	1.4E-03	4.2E-02	1.8E-02	3.3E-03	4.5E-03	7.3E-03
	Rolling Annual	4.9E-01	1.3E+01	3.1E+00	1.8E-02	7.4E+02	7.4E+01	2.4E+03	2.4E-03	3.7E-02	2.4E+03	8.1E-02	3.9E-03	2.7E-03	2.7E-03	1.4E-03	4.2E-02	1.8E-02	3.3E-03	4.5E-03	7.3E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	1.8E-01	4.6E+00	1.1E+00	6.4E-03	2.7E+02	2.7E+01	8.5E+02	8.7E-04	1.3E-02	8.6E+02	2.9E-02	1.4E-03	9.9E-04	9.8E-04	4.9E-04	1.5E-02	6.6E-03	1.2E-03	1.6E-03	2.6E-03
	S2.5	3.1E-01	8.2E+00	2.0E+00	1.1E-02	4.7E+02	4.7E+01	1.5E+03	1.5E-03	2.4E-02	1.5E+03	5.2E-02	2.5E-03	1.7E-03	1.7E-03	8.7E-04	2.7E-02	1.2E-02	2.1E-03	2.9E-03	4.7E-03
Happy Valley	Monthly	1.4E-01	3.8E+00	9.3E-01	5.3E-03	2.2E+02	2.2E+01	7.0E+02	7.2E-04	1.1E-02	7.0E+02	2.4E-02	1.2E-03	8.1E-04	8.0E-04	4.1E-04	1.2E-02	5.4E-03	9.8E-04	1.3E-03	2.2E-03
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	3.1E-01	8.1E+00	2.0E+00	1.1E-02	4.7E+02	4.7E+01	1.5E+03	1.5E-03	2.3E-02	1.5E+03	5.2E-02	2.5E-03	1.7E-03	1.7E-03	8.6E-04	2.6E-02	1.2E-02	2.1E-03	2.9E-03	4.6E-03
	Rolling Annual	3.1E-01	8.1E+00	2.0E+00	1.1E-02	4.7E+02	4.7E+01	1.5E+03	1.5E-03	2.3E-02	1.5E+03	5.2E-02	2.5E-03	1.7E-03	1.7E-03	8.6E-04	2.6E-02	1.2E-02	2.1E-03	2.9E-03	4.6E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	2.9E-01	7.5E+00	1.8E+00	1.0E-02	4.3E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.0E-04	2.5E-02	1.1E-02	1.9E-03	2.6E-03	4.3E-03
	S2.5	2.3E-02	6.0E-01	1.5E-01	8.3E-04	3.4E+01	3.5E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.8E-03	1.8E-04	1.3E-04	1.3E-04	6.4E-05	2.0E-03	8.5E-04	1.6E-04	2.1E-04	3.4E-04
Slope Mountain	Monthly	7.7E-02	2.0E+00	5.0E-01	2.8E-03	1.2E+02	1.2E+01	3.7E+02	3.8E-04	5.9E-03	3.7E+02	1.3E-02	6.2E-04	4.3E-04	4.3E-04	2.2E-04	6.6E-03	2.9E-03	5.2E-04	7.1E-04	1.2E-03
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.9E-01	7.5E+00	1.8E+00	1.0E-02	4.3E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.0E-04	2.5E-02	1.1E-02	1.9E-03	2.6E-03	4.3E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	2.9E-01	7.5E+00	1.8E+00	1.0E-02	4.3E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.0E-04	2.5E-02	1.1E-02	1.9E-03	2.6E-03	4.3E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	2.1E-01	5.5E+00	1.4E+00	7.6E-03	3.2E+02	3.2E+01	1.0E+03	1.0E-03	1.6E-02	1.0E+03	3.5E-02	1.7E-03	1.2E-03	1.2E-03	5.9E-04	1.8E-02	7.8E-03	1.4E-03	1.9E-03	3.1E-03
	S1.5	7.6E-02	2.0E+00	4.9E-01	2.8E-03	1.2E+02	1.2E+01	3.7E+02	3.8E-04	5.8E-03	3.7E+02	1.3E-02	6.2E-04	4.3E-04	4.2E-04	2.1E-04	6.6E-03	2.9E-03	5.2E-04	7.1E-04	1.1E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Galbraith Lake	Monthly	7.8E-02	2.1E+00	5.1E-01	2.9E-03	1.2E+02	1.2E+01	3.8E+02	3.9E-04	6.0E-03	3.8E+02	1.3E-02	6.4E-04	4.4E-04	4.4E-04	2.2E-04	6.7E-03	2.9E-03	5.3E-04	7.3E-04	1.2E-03
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	3.0E-01	7.8E+00	1.9E+00	1.1E-02	4.5E+02	4.5E+01	1.4E+03	1.5E-03	2.3E-02	1.4E+03	5.0E-02	2.4E-03	1.7E-03	1.6E-03	8.3E-04	2.5E-02	1.1E-02	2.0E-03	2.8E-03	4.5E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	3.0E-01	7.8E+00	1.9E+00	1.1E-02	4.5E+02	4.5E+01	1.4E+03	1.5E-03	2.3E-02	1.4E+03	5.0E-02	2.4E-03	1.7E-03	1.6E-03	8.3E-04	2.5E-02	1.1E-02	2.0E-03	2.8E-03	4.5E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	2.5E-01	6.6E+00	1.6E+00	9.2E-03	3.8E+02	3.9E+01	1.2E+03	1.3E-03	1.9E-02	1.2E+03	4.2E-02	2.0E-03	1.4E-03	1.4E-03	7.1E-04	2.2E-02	9.4E-03	1.7E-03	2.3E-03	3.8E-03
	S1.5	4.4E-02	1.2E+00	2.9E-01	1.6E-03	6.7E+01	6.8E+00	2.2E+02	2.2E-04	3.4E-03	2.2E+02	7.4E-03	3.6E-04	2.5E-04	2.5E-04	1.2E-04	3.8E-03	1.7E-03	3.0E-04	4.1E-04	6.7E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chandalar	Monthly	6.5E-02	1.7E+00	4.2E-01	2.4E-03	9.8E+01	9.9E+00	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.6E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.7E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.1E-01	2.7E+00	6.8E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.2E-04	8.0E-03	5.2E+02	1.8E-02	8.5E-04	5.9E-04	5.8E-04	3.0E-04	9.0E-03	3.9E-03	7.2E-04	9.8E-04	1.6E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	1.1E-01	2.7E+00	6.8E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.2E-04	8.0E-03	5.2E+02	1.8E-02	8.5E-04	5.9E-04	5.8E-04	3.0E-04	9.0E-03	3.9E-03	7.2E-04	9.8E-04	1.6E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	1.1E-01	2.7E+00	6.8E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.2E-04	8.0E-03	5.2E+02	1.8E-02	8.5E-04	5.9E-04	5.8E-04	3.0E-04	9.0E-03	3.9E-03	7.2E-04	9.8E-04	1.6E-03
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MS-106-1	Monthly	5.8E-02	1.5E+00	3.7E-01	2.1E-03	8.8E+01	8.8E+00	2.8E+02	2.9E-04	4.4E-03	2.8E+02	9.7E-03	4.7E-04	3.3E-04	3.2E-04	1.6E-04	5.0E-03	2.2E-03	3.9E-04	5.4E-04	8.7E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.8E-01	4.6E+00	1.1E+00	6.5E-03	2.7E+02	2.7E+01	8.7E+02	8.8E-04	1.4E-02	8.7E+02	3.0E-02	1.4E-03	1.0E-03	9.9E-04	5.0E-04	1.5E-02	6.6E-03	1.2E-03	1.6E-03	2.7E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	1.8E-01	4.6E+00	1.1E+00	6.5E-03	2.7E+02	2.7E+01	8.7E+02	8.8E-04	1.4E-02	8.7E+02	3.0E-02	1.4E-03	1.0E-03	9.9E-04	5.0E-04	1.5E-02	6.6E-03	1.2E-03	1.6E-03	2.7E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	7.2E-02	1.9E+00	4.6E-01	2.6E-03	1.1E+02	1.1E+01	3.5E+02	3.6E-04	5.5E-03	3.5E+02	1.2E-02	5.8E-04	4.1E-04	4.0E-04	2.0E-04	6.2E-03	2.7E-03	4.9E-04	6.7E-04	1.1E-03
	S1.5	1.1E-01	2.7E+00	6.8E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.2E-04	8.0E-03	5.2E+02	1.8E-02	8.6E-04	5.9E-04	5.9E-04	3.0E-04	9.1E-03	3.9E-03	7.2E-04	9.8E-04	1.6E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MS-102-1	Monthly	6.4E-02	1.6E+00	4.1E-01	2.3E-03	9.6E+01	9.7E+00	3.1E+02	3.2E-04	4.8E-03	3.1E+02	1.1E-02	5.2E-04	3.6E-04	3.5E-04	1.8E-04	5.5E-03	2.4E-03	4.3E-04	5.9E-04	9.6E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.8E-01	7.2E+00	1.8E+00	1.0E-02	4.2E+02	4.2E+01	1.4E+03	1.4E-03	2.1E-02	1.4E+03	4.6E-02	2.2E-03	1.6E-03	1.5E-03	7.8E-04	2.4E-02	1.0E-02	1.9E-03	2.6E-03	4.2E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	2.8E-01	7.2E+00	1.8E+00	1.0E-02	4.2E+02	4.2E+01	1.4E+03	1.4E-03	2.1E-02	1.4E+03	4.6E-02	2.2E-03	1.6E-03	1.5E-03	7.8E-04	2.4E-02	1.0E-02	1.9E-03	2.6E-03	4.2E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	4.6E-03	1.2E-01	2.9E-02	1.7E-04	6.9E+00	6.9E-01	2.2E+01	2.3E-05	3.5E-04	2.2E+01	7.6E-04	3.7E-05	2.6E-05	2.5E-05	1.3E-05	3.9E-04	1.7E-04	3.1E-05	4.2E-05	6.8E-05
	S1.5	2.7E-01	7.0E+00	1.8E+00	1.0E-02	4.1E+02	4.2E+01	1.3E+03	1.4E-03	2.1E-02	1.3E+03	4.6E-02	2.2E-03	1.5E-03	1.5E-03	7.6E-04	2.3E-02	1.0E-02	1.9E-03	2.5E-03	4.1E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prospect	Monthly	5.5E-02	1.4E+00	3.5E-01	2.0E-03	8.3E+01	8.3E+00	2.7E+02	2.7E-04	4.1E-03	2.7E+02	9.1E-03	4.4E-04	3.1E-04	3.0E-04	1.5E-04	4.7E-03	2.0E-03	3.7E-04	5.1E-04	8.2E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.9E-01	7.4E+00	1.9E+00	1.1E-02	4.4E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.1E-04	2.5E-02	1.1E-02	2.0E-03	2.7E-03	4.3E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	2.9E-01	7.4E+00	1.9E+00	1.1E-02	4.4E+02	4.4E+01	1.4E+03	1.4E-03	2.2E-02	1.4E+03	4.8E-02	2.3E-03	1.6E-03	1.6E-03	8.1E-04	2.5E-02	1.1E-02	2.0E-03	2.7E-03	4.3E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	2.6E-01	6.8E+00	1.7E+00	9.6E-03	4.0E+02	4.0E+01	1.3E+03	1.3E-03	2.0E-02	1.3E+03	4.4E-02	2.1E-03	1.5E-03	1.5E-03	7.4E-04	2.2E-02	9.8E-03	1.8E-03	2.4E-03	3.9E-03
	W2	2.6E-02	6.6E-01	1.7E-01	9.4E-04	3.9E+01	3.9E+00	1.3E+02	1.3E-04	1.9E-03	1.3E+02	4.3E-03	2.1E-04	1.4E-04	1.4E-04	7.2E-05	2.2E-03	9.6E-04	1.7E-04	2.4E-04	3.9E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																			
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Seven Mile	Monthly	2.8E-02	7.3E-01	1.8E-01	1.0E-03	4.3E+01	4.3E+00	1.4E+02	1.4E-04	2.1E-03	1.4E+02	4.7E-03	2.3E-04	1.6E-04	1.6E-04	7.9E-05	2.4E-03	1.1E-03	1.9E-04	2.6E-04	4.2E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	8.9E-02	2.3E+00	5.8E-01	3.3E-03	1.4E+02	1.4E+01	4.4E+02	4.4E-04	6.8E-03	4.4E+02	1.5E-02	7.2E-04	5.0E-04	5.0E-04	2.5E-04	7.7E-03	3.3E-03	6.1E-04	8.3E-04	1.3E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	8.9E-02	2.3E+00	5.8E-01	3.3E-03	1.4E+02	1.4E+01	4.4E+02	4.4E-04	6.8E-03	4.4E+02	1.5E-02	7.2E-04	5.0E-04	5.0E-04	2.5E-04	7.7E-03	3.3E-03	6.1E-04	8.3E-04	1.3E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	8.9E-02	2.3E+00	5.8E-01	3.3E-03	1.4E+02	1.4E+01	4.4E+02	4.4E-04	6.8E-03	4.4E+02	1.5E-02	7.2E-04	5.0E-04	5.0E-04	2.5E-04	7.7E-03	3.3E-03	6.1E-04	8.3E-04	1.3E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MS-74-2HR	Monthly	1.9E-02	4.8E-01	1.2E-01	6.9E-04	2.8E+01	2.8E+00	9.1E+01	9.3E-05	1.4E-03	9.2E+01	3.1E-03	1.5E-04	1.1E-04	1.0E-04	5.2E-05	1.6E-03	7.0E-04	1.3E-04	1.7E-04	2.8E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.5E-02	6.5E-01	1.6E-01	9.2E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.9E-03	1.2E+02	4.2E-03	2.0E-04	1.4E-04	1.4E-04	7.0E-05	2.1E-03	9.4E-04	1.7E-04	2.3E-04	3.8E-04
	2	3.4E-02	8.8E-01	2.2E-01	1.3E-03	5.1E+01	5.2E+00	1.7E+02	1.7E-04	2.6E-03	1.7E+02	5.7E-03	2.8E-04	1.9E-04	1.9E-04	9.5E-05	2.9E-03	1.3E-03	2.3E-04	3.2E-04	5.1E-04
	Rolling Annual	5.9E-02	1.5E+00	3.8E-01	2.2E-03	8.9E+01	9.0E+00	2.9E+02	2.9E-04	4.5E-03	2.9E+02	9.9E-03	4.8E-04	3.3E-04	3.3E-04	1.7E-04	5.1E-03	2.2E-03	4.0E-04	5.5E-04	8.9E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	5.9E-02	1.5E+00	3.8E-01	2.2E-03	8.9E+01	9.0E+00	2.9E+02	2.9E-04	4.5E-03	2.9E+02	9.9E-03	4.8E-04	3.3E-04	3.3E-04	1.7E-04	5.1E-03	2.2E-03	4.0E-04	5.5E-04	8.9E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livengood	Monthly	9.1E-03	2.3E-01	5.9E-02	3.3E-04	1.4E+01	1.4E+00	4.5E+01	4.5E-05	6.9E-04	4.5E+01	1.5E-03	7.4E-05	5.1E-05	5.1E-05	2.5E-05	7.8E-04	3.4E-04	6.2E-05	8.4E-05	1.4E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.1E-02	2.9E-01	7.3E-02	4.2E-04	1.7E+01	1.7E+00	5.5E+01	5.6E-05	8.6E-04	5.5E+01	1.9E-03	9.2E-05	6.4E-05	6.3E-05	3.2E-05	9.7E-04	4.2E-04	7.7E-05	1.0E-04	1.7E-04
	2	8.8E-03	2.3E-01	5.7E-02	3.2E-04	1.3E+01	1.3E+00	4.3E+01	4.4E-05	6.7E-04	4.3E+01	1.5E-03	7.1E-05	5.0E-05	4.9E-05	2.5E-05	7.6E-04	3.3E-04	6.0E-05	8.2E-05	1.3E-04
	Rolling Annual	2.0E-02	5.2E-01	1.3E-01	7.4E-04	3.0E+01	3.1E+00	9.9E+01	1.0E-04	1.5E-03	9.9E+01	3.4E-03	1.6E-04	1.1E-04	1.1E-04	5.6E-05	1.7E-03	7.5E-04	1.4E-04	1.9E-04	3.0E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	2.0E-02	5.2E-01	1.3E-01	7.4E-04	3.0E+01	3.1E+00	9.9E+01	1.0E-04	1.5E-03	9.9E+01	3.4E-03	1.6E-04	1.1E-04	1.1E-04	5.6E-05	1.7E-03	7.5E-04	1.4E-04	1.9E-04	3.0E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tolovana	Monthly	2.4E-02	6.1E-01	1.5E-01	8.7E-04	3.6E+01	3.6E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	3.0E-02	7.6E-01	1.9E-01	1.1E-03	4.5E+01	4.5E+00	1.4E+02	1.5E-04	2.2E-03	1.4E+02	4.9E-03	2.4E-04	1.7E-04	1.6E-04	8.3E-05	2.5E-03	1.1E-03	2.0E-04	2.7E-04	4.4E-04
	2	2.3E-02	6.0E-01	1.5E-01	8.5E-04	3.5E+01	3.5E+00	1.1E+02	1.1E-04	1.8E-03	1.1E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.5E-05	2.0E-03	8.6E-04	1.6E-04	2.1E-04	3.5E-04
	Rolling Annual	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.0E+01	8.0E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.8E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	7.9E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.0E+01	8.0E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.8E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	7.9E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tatalina	Monthly	2.2E-02	5.7E-01	1.4E-01	8.1E-04	3.3E+01	3.3E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.6E-03	1.8E-04	1.2E-04	1.2E-04	6.1E-05	1.9E-03	8.2E-04	1.5E-04	2.0E-04	3.3E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.7E-02	7.0E-01	1.8E-01	1.0E-03	4.1E+01	4.1E+00	1.3E+02	1.3E-04	2.1E-03	1.3E+02	4.5E-03	2.2E-04	1.5E-04	1.5E-04	7.6E-05	2.3E-03	1.0E-03	1.8E-04	2.5E-04	4.1E-04
	2	2.1E-02	5.5E-01	1.4E-01	7.8E-04	3.2E+01	3.2E+00	1.0E+02	1.0E-04	1.6E-03	1.0E+02	3.5E-03	1.7E-04	1.2E-04	1.2E-04	5.9E-05	1.8E-03	7.9E-04	1.4E-04	2.0E-04	3.2E-04
	Rolling Annual	4.8E-02	1.3E+00	3.1E-01	1.8E-03	7.3E+01	7.4E+00	2.4E+02	2.4E-04	3.7E-03	2.4E+02	8.1E-03	3.9E-04	2.7E-04	2.7E-04	1.4E-04	4.1E-03	1.8E-03	3.3E-04	4.5E-04	7.3E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																			
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	4.8E-02	1.3E+00	3.1E-01	1.8E-03	7.3E+01	7.4E+00	2.4E+02	2.4E-04	3.7E-03	2.4E+02	8.1E-03	3.9E-04	2.7E-04	2.7E-04	1.4E-04	4.1E-03	1.8E-03	3.3E-04	4.5E-04	7.3E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Chatanika	Monthly	2.1E-02	5.5E-01	1.4E-01	7.8E-04	3.2E+01	3.2E+00	1.0E+02	1.0E-04	1.6E-03	1.0E+02	3.5E-03	1.7E-04	1.2E-04	1.2E-04	5.9E-05	1.8E-03	7.9E-04	1.4E-04	2.0E-04	3.2E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	3.9E-02	1.0E+00	2.5E-01	1.4E-03	5.9E+01	5.9E+00	1.9E+02	1.9E-04	3.0E-03	1.9E+02	6.5E-03	3.2E-04	2.2E-04	2.2E-04	1.1E-04	3.3E-03	1.5E-03	2.7E-04	3.6E-04	5.9E-04
	Rolling Annual	3.9E-02	1.0E+00	2.5E-01	1.4E-03	5.9E+01	5.9E+00	1.9E+02	1.9E-04	3.0E-03	1.9E+02	6.5E-03	3.2E-04	2.2E-04	2.2E-04	1.1E-04	3.3E-03	1.5E-03	2.7E-04	3.6E-04	5.9E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	3.9E-02	1.0E+00	2.5E-01	1.4E-03	5.9E+01	5.9E+00	1.9E+02	1.9E-04	3.0E-03	1.9E+02	6.5E-03	3.2E-04	2.2E-04	2.2E-04	1.1E-04	3.3E-03	1.5E-03	2.7E-04	3.6E-04	5.9E-04
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dunbar	Monthly	7.1E-04	1.8E-02	4.6E-03	2.6E-05	1.1E+00	1.1E-01	3.5E+00	3.5E-06	5.4E-05	3.5E+00	1.2E-04	5.7E-06	4.0E-06	3.9E-06	2.0E-06	6.1E-05	2.6E-05	4.8E-06	6.6E-06	1.1E-05
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2.3E-03	6.1E-02	1.5E-02	8.7E-05	3.6E+00	3.6E-01	1.2E+01	1.2E-05	1.8E-04	1.2E+01	3.9E-04	1.9E-05	1.3E-05	1.3E-05	6.6E-06	2.0E-04	8.8E-05	1.6E-05	2.2E-05	3.5E-05
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	2.3E-03	6.1E-02	1.5E-02	8.7E-05	3.6E+00	3.6E-01	1.2E+01	1.2E-05	1.8E-04	1.2E+01	3.9E-04	1.9E-05	1.3E-05	1.3E-05	6.6E-06	2.0E-04	8.8E-05	1.6E-05	2.2E-05	3.5E-05
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	8.4E-04	2.2E-02	5.4E-03	3.1E-05	1.3E+00	1.3E-01	4.1E+00	4.2E-06	6.4E-05	4.1E+00	1.4E-04	6.8E-06	4.7E-06	4.7E-06	2.3E-06	7.2E-05	3.1E-05	5.7E-06	7.8E-06	1.3E-05
	S1.5	1.5E-03	3.9E-02	9.8E-03	5.6E-05	2.3E+00	2.3E-01	7.4E+00	7.5E-06	1.1E-04	7.4E+00	2.5E-04	1.2E-05	8.5E-06	8.4E-06	4.2E-06	1.3E-04	5.6E-05	1.0E-05	1.4E-05	2.3E-05
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rex	Monthly	1.0E-02	2.7E-01	6.7E-02	3.8E-04	1.6E+01	1.6E+00	5.1E+01	5.2E-05	7.9E-04	5.1E+01	1.7E-03	8.4E-05	5.9E-05	5.8E-05	2.9E-05	8.9E-04	3.9E-04	7.1E-05	9.6E-05	1.6E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	3.1E-02	8.0E-01	2.0E-01	1.1E-03	4.7E+01	4.7E+00	1.5E+02	1.5E-04	2.3E-03	1.5E+02	5.2E-03	2.5E-04	1.7E-04	1.7E-04	8.7E-05	2.6E-03	1.2E-03	2.1E-04	2.9E-04	4.6E-04
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	3.1E-02	8.0E-01	2.0E-01	1.1E-03	4.7E+01	4.7E+00	1.5E+02	1.5E-04	2.3E-03	1.5E+02	5.2E-03	2.5E-04	1.7E-04	1.7E-04	8.7E-05	2.6E-03	1.2E-03	2.1E-04	2.9E-04	4.6E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	1.2E-02	3.0E-01	7.5E-02	4.3E-04	1.8E+01	1.8E+00	5.7E+01	5.8E-05	8.8E-04	5.7E+01	1.9E-03	9.4E-05	6.5E-05	6.5E-05	3.3E-05	1.0E-03	4.3E-04	7.9E-05	1.1E-04	1.7E-04
	S1.5	1.9E-02	5.0E-01	1.2E-01	7.0E-04	2.9E+01	2.9E+00	9.4E+01	9.6E-05	1.5E-03	9.4E+01	3.2E-03	1.6E-04	1.1E-04	1.1E-04	5.4E-05	1.7E-03	7.2E-04	1.3E-04	1.8E-04	2.9E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Healy	Monthly	1.5E-02	3.9E-01	9.8E-02	5.5E-04	2.3E+01	2.3E+00	7.4E+01	7.5E-05	1.2E-03	7.4E+01	2.5E-03	1.2E-04	8.5E-05	8.4E-05	4.2E-05	1.3E-03	5.7E-04	1.0E-04	1.4E-04	2.3E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	3.1E-02	8.2E-01	2.0E-01	1.2E-03	4.8E+01	4.8E+00	1.5E+02	1.6E-04	2.4E-03	1.5E+02	5.3E-03	2.6E-04	1.8E-04	1.7E-04	8.8E-05	2.7E-03	1.2E-03	2.1E-04	2.9E-04	4.7E-04
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	3.1E-02	8.2E-01	2.0E-01	1.2E-03	4.8E+01	4.8E+00	1.5E+02	1.6E-04	2.4E-03	1.5E+02	5.3E-03	2.6E-04	1.8E-04	1.7E-04	8.8E-05	2.7E-03	1.2E-03	2.1E-04	2.9E-04	4.7E-04
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	3.1E-02	8.2E-01	2.0E-01	1.2E-03	4.8E+01	4.8E+00	1.5E+02	1.6E-04	2.4E-03	1.5E+02	5.3E-03	2.6E-04	1.8E-04	1.7E-04	8.8E-05	2.7E-03	1.2E-03	2.1E-04	2.9E-04	4.7E-04
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cantwell	Monthly	4.7E-02	1.2E+00	3.0E-01	1.7E-03	7.1E+01	7.2E+00	2.3E+02	2.3E-04	3.6E-03	2.3E+02	7.8E-03	3.8E-04	2.6E-04	2.6E-04	1.3E-04	4.0E-03	1.8E-03	3.2E-04	4.4E-04	7.1E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.4E-01	3.6E+00	9.0E-01	5.1E-03	2.1E+02	2.1E+01	6.8E+02	6.9E-04	1.1E-02	6.8E+02	2.3E-02	1.1E-03	7.9E-04	7.8E-04	3.9E-04	1.2E-02	5.2E-03	9.5E-04	1.3E-03	2.1E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	1.4E-01	3.6E+00	9.0E-01	5.1E-03	2.1E+02	2.1E+01	6.8E+02	6.9E-04	1.1E-02	6.8E+02	2.3E-02	1.1E-03	7.9E-04	7.8E-04	3.9E-04	1.2E-02	5.2E-03	9.5E-04	1.3E-03	2.1E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
	W1	5.7E-02	1.5E+00	3.7E-01	2.1E-03	8.7E+01	8.8E+00	2.8E+02	2.9E-04	4.4E-03	2.8E+02	9.6E-03	4.7E-04	3.2E-04	3.2E-04	1.6E-04	4.9E-03	2.1E-03	3.9E-04	5.3E-04	8.6E-04
	S1.5	8.2E-02	2.1E+00	5.3E-01	3.0E-03	1.2E+02	1.3E+01	4.0E+02	4.1E-04	6.2E-03	4.0E+02	1.4E-02	6.7E-04	4.6E-04	4.6E-04	2.3E-04	7.0E-03	3.1E-03	5.6E-04	7.6E-04	1.2E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Pipe Truck Delivery Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																			
Storage Yard Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Broad Pass	Monthly	3.8E-02	9.8E-01	2.4E-01	1.4E-03	5.7E+01	5.8E+00	1.8E+02	1.9E-04	2.9E-03	1.8E+02	6.3E-03	3.1E-04	2.1E-04	2.1E-04	1.1E-04	3.2E-03	1.4E-03	2.6E-04	3.5E-04	5.7E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.1E-01	2.8E+00	6.9E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.3E-04	8.2E-03	5.2E+02	1.8E-02	8.7E-04	6.0E-04	6.0E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	9.9E-04	1.6E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	1.1E-01	2.8E+00	6.9E-01	3.9E-03	1.6E+02	1.6E+01	5.2E+02	5.3E-04	8.2E-03	5.2E+02	1.8E-02	8.7E-04	6.0E-04	6.0E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	9.9E-04	1.6E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	3.8E-02	9.8E-01	2.4E-01	1.4E-03	5.7E+01	5.8E+00	1.8E+02	1.9E-04	2.9E-03	1.8E+02	6.3E-03	3.1E-04	2.1E-04	2.1E-04	1.1E-04	3.2E-03	1.4E-03	2.6E-04	3.5E-04	5.7E-04
	S1.5	6.9E-02	1.8E+00	4.5E-01	2.5E-03	1.1E+02	1.1E+01	3.4E+02	3.4E-04	5.3E-03	3.4E+02	1.2E-02	5.6E-04	3.9E-04	3.9E-04	1.9E-04	6.0E-03	2.6E-03	4.7E-04	6.4E-04	1.0E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Swan Lake	Monthly	2.9E-02	7.6E-01	1.9E-01	1.1E-03	4.5E+01	4.5E+00	1.4E+02	1.5E-04	2.2E-03	1.4E+02	4.9E-03	2.4E-04	1.7E-04	1.6E-04	8.3E-05	2.5E-03	1.1E-03	2.0E-04	2.7E-04	4.4E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	8.8E-02	2.3E+00	5.7E-01	3.2E-03	1.3E+02	1.3E+01	4.3E+02	4.4E-04	6.7E-03	4.3E+02	1.5E-02	7.1E-04	5.0E-04	4.9E-04	2.5E-04	7.5E-03	3.3E-03	6.0E-04	8.1E-04	1.3E-03
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rolling Annual	8.8E-02	2.3E+00	5.7E-01	3.2E-03	1.3E+02	1.3E+01	4.3E+02	4.4E-04	6.7E-03	4.3E+02	1.5E-02	7.1E-04	5.0E-04	4.9E-04	2.5E-04	7.5E-03	3.3E-03	6.0E-04	8.1E-04	1.3E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	3.5E-02	9.0E-01	2.3E-01	1.3E-03	5.3E+01	5.3E+00	1.7E+02	1.7E-04	2.7E-03	1.7E+02	5.8E-03	2.8E-04	2.0E-04	1.9E-04	9.8E-05	3.0E-03	1.3E-03	2.4E-04	3.2E-04	5.2E-04
	S1.5	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.0E+01	8.1E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.9E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	8.0E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rustic Wilderness	Monthly	3.2E-02	8.4E-01	2.1E-01	1.2E-03	4.9E+01	4.9E+00	1.6E+02	1.6E-04	2.5E-03	1.6E+02	5.4E-03	2.6E-04	1.8E-04	1.8E-04	9.0E-05	2.8E-03	1.2E-03	2.2E-04	3.0E-04	4.9E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1.8E-01	4.8E+00	1.2E+00	6.7E-03	2.8E+02	2.8E+01	8.9E+02	9.1E-04	1.4E-02	8.9E+02	3.1E-02	1.5E-03	1.0E-03	1.0E-03	5.2E-04	1.6E-02	6.9E-03	1.3E-03	1.7E-03	2.8E-03
	2	4.9E-02	1.3E+00	3.1E-01	1.8E-03	7.4E+01	7.4E+00	2.4E+02	2.4E-04	3.7E-03	2.4E+02	8.1E-03	3.9E-04	2.7E-04	2.7E-04	1.4E-04	4.2E-03	1.8E-03	3.3E-04	4.5E-04	7.3E-04
	Rolling Annual	2.3E-01	6.0E+00	1.5E+00	8.5E-03	3.5E+02	3.5E+01	1.1E+03	1.2E-03	1.8E-02	1.1E+03	3.9E-02	1.9E-03	1.3E-03	1.3E-03	6.5E-04	2.0E-02	8.7E-03	1.6E-03	2.2E-03	3.5E-03
	W-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	3.7E-02	9.6E-01	2.4E-01	1.4E-03	5.6E+01	5.7E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.2E-03	3.0E-04	2.1E-04	2.1E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.6E-04
	S1.5	1.1E-01	2.8E+00	7.1E-01	4.0E-03	1.7E+02	1.7E+01	5.3E+02	5.4E-04	8.4E-03	5.3E+02	1.8E-02	8.9E-04	6.2E-04	6.1E-04	3.1E-04	9.4E-03	4.1E-03	7.5E-04	1.0E-03	1.7E-03
	W2	8.6E-02	2.2E+00	5.5E-01	3.1E-03	1.3E+02	1.3E+01	4.2E+02	4.3E-04	6.5E-03	4.2E+02	1.4E-02	6.9E-04	4.8E-04	4.8E-04	2.4E-04	7.3E-03	3.2E-03	5.8E-04	7.9E-04	1.3E-03
	S2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Construction Camps and Storage Yards

Speciated Fuel Truck Trip Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prudhoe Bay	Monthly	1.2E-02	3.2E-01	7.9E-02	4.4E-04	1.9E+01	1.9E+00	5.9E+01	6.0E-05	9.2E-04	5.9E+01	2.0E-03	9.9E-05	6.8E-05	6.8E-05	3.4E-05	1.0E-03	4.5E-04	8.3E-05	1.1E-04	1.8E-04
	-1	1.1E-01	2.8E+00	7.0E-01	3.9E-03	1.7E+02	1.7E+01	5.2E+02	5.3E-04	8.2E-03	5.2E+02	1.8E-02	8.7E-04	6.1E-04	6.0E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	1.0E-03	1.6E-03
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.1E-01	2.8E+00	7.0E-01	3.9E-03	1.7E+02	1.7E+01	5.2E+02	5.3E-04	8.2E-03	5.2E+02	1.8E-02	8.7E-04	6.1E-04	6.0E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	1.0E-03	1.6E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	2.3E-02	5.9E-01	1.5E-01	8.2E-04	3.6E+01	3.6E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.8E-03	1.8E-04	1.3E-04	1.3E-04	6.3E-05	1.9E-03	8.4E-04	1.5E-04	2.1E-04	3.4E-04
	W0	6.4E-02	1.7E+00	4.2E-01	2.3E-03	1.0E+02	1.0E+01	3.1E+02	3.2E-04	4.9E-03	3.1E+02	1.1E-02	5.2E-04	3.6E-04	3.6E-04	1.8E-04	5.5E-03	2.4E-03	4.4E-04	6.0E-04	9.7E-04
	S0.5	2.3E-02	5.9E-01	1.5E-01	8.2E-04	3.6E+01	3.6E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.8E-03	1.8E-04	1.3E-04	1.3E-04	6.3E-05	1.9E-03	8.4E-04	1.5E-04	2.1E-04	3.4E-04
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.1E-01	2.8E+00	7.0E-01	3.9E-03	1.7E+02	1.7E+01	5.2E+02	5.3E-04	8.2E-03	5.2E+02	1.8E-02	8.7E-04	6.1E-04	6.0E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	1.0E-03	1.6E-03
Franklin Bluffs	Monthly	1.1E-02	2.9E-01	7.2E-02	4.0E-04	1.7E+01	1.8E+00	5.4E+01	5.5E-05	8.4E-04	5.4E+01	1.9E-03	9.0E-05	6.3E-05	6.2E-05	3.1E-05	9.5E-04	4.2E-04	7.6E-05	1.0E-04	1.7E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	5.9E-02	1.5E+00	3.8E-01	2.1E-03	9.2E+01	9.3E+00	2.8E+02	2.9E-04	4.5E-03	2.8E+02	9.8E-03	4.8E-04	3.3E-04	3.3E-04	1.6E-04	5.0E-03	2.2E-03	4.0E-04	5.4E-04	8.8E-04
	1	6.8E-02	1.8E+00	4.4E-01	2.5E-03	1.1E+02	1.1E+01	3.3E+02	3.4E-04	5.2E-03	3.3E+02	1.1E-02	5.5E-04	3.8E-04	3.8E-04	1.9E-04	5.8E-03	2.5E-03	4.6E-04	6.3E-04	1.0E-03
	2	1.2E-01	3.1E+00	7.6E-01	4.3E-03	1.8E+02	1.9E+01	5.7E+02	5.8E-04	8.9E-03	5.7E+02	2.0E-02	9.5E-04	6.6E-04	6.5E-04	3.3E-04	1.0E-02	4.4E-03	8.0E-04	1.1E-03	1.8E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	4.0E-02	1.0E+00	2.6E-01	1.4E-03	6.2E+01	6.3E+00	1.9E+02	2.0E-04	3.0E-03	1.9E+02	6.6E-03	3.2E-04	2.2E-04	2.2E-04	1.1E-04	3.4E-03	1.5E-03	2.7E-04	3.7E-04	6.0E-04
	S1.5	5.9E-02	1.5E+00	3.8E-01	2.1E-03	9.2E+01	9.3E+00	2.8E+02	2.9E-04	4.5E-03	2.8E+02	9.8E-03	4.8E-04	3.3E-04	3.3E-04	1.6E-04	5.0E-03	2.2E-03	4.0E-04	5.4E-04	8.8E-04
	W2	3.0E-02	7.9E-01	1.9E-01	1.1E-03	4.7E+01	4.8E+00	1.5E+02	1.5E-04	2.3E-03	1.5E+02	5.0E-03	2.4E-04	1.7E-04	1.7E-04	8.4E-05	2.6E-03	1.1E-03	2.1E-04	2.8E-04	4.5E-04
	S2.5	1.3E-01	3.3E+00	8.2E-01	4.6E-03	2.0E+02	2.0E+01	6.2E+02	6.3E-04	9.7E-03	6.2E+02	2.1E-02	1.0E-03	7.1E-04	7.1E-04	3.6E-04	1.1E-02	4.7E-03	8.6E-04	1.2E-03	1.9E-03
Happy Valley	Monthly	1.0E-02	2.6E-01	6.5E-02	3.6E-04	1.6E+01	1.6E+00	4.9E+01	5.0E-05	7.6E-04	4.9E+01	1.7E-03	8.1E-05	5.6E-05	5.6E-05	2.8E-05	8.6E-04	3.7E-04	6.8E-05	9.3E-05	1.5E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	7.9E-02	2.1E+00	5.1E-01	2.9E-03	1.2E+02	1.2E+01	3.8E+02	3.9E-04	6.0E-03	3.8E+02	1.3E-02	6.4E-04	4.4E-04	4.4E-04	2.2E-04	6.7E-03	2.9E-03	5.3E-04	7.3E-04	1.2E-03
	1	8.7E-02	2.3E+00	5.6E-01	3.2E-03	1.4E+02	1.4E+01	4.2E+02	4.3E-04	6.6E-03	4.2E+02	1.5E-02	7.1E-04	4.9E-04	4.8E-04	2.4E-04	7.5E-03	3.3E-03	5.9E-04	8.1E-04	1.3E-03
	2	1.1E-01	2.8E+00	6.8E-01	3.8E-03	1.7E+02	1.7E+01	5.1E+02	5.2E-04	8.0E-03	5.1E+02	1.8E-02	8.6E-04	6.0E-04	5.9E-04	3.0E-04	9.1E-03	4.0E-03	7.2E-04	9.8E-04	1.6E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	8.6E-03	2.3E-01	5.5E-02	3.1E-04	1.3E+01	1.4E+00	4.2E+01	4.3E-05	6.5E-04	4.2E+01	1.4E-03	6.9E-05	4.8E-05	4.8E-05	2.4E-05	7.3E-04	3.2E-04	5.8E-05	7.9E-05	1.3E-04
	W1	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.3E+01	8.4E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.8E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	7.9E-04
	S1.5	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.3E+01	8.4E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.8E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	7.9E-04
	W2	5.3E-02	1.4E+00	3.4E-01	1.9E-03	8.3E+01	8.4E+00	2.6E+02	2.6E-04	4.0E-03	2.6E+02	8.8E-03	4.3E-04	3.0E-04	2.9E-04	1.5E-04	4.5E-03	2.0E-03	3.6E-04	4.9E-04	7.9E-04
	S2.5	1.7E-01	4.4E+00	1.1E+00	6.0E-03	2.6E+02	2.6E+01	8.0E+02	8.2E-04	1.3E-02	8.0E+02	2.8E-02	1.3E-03	9.3E-04	9.2E-04	4.6E-04	1.4E-02	6.2E-03	1.1E-03	1.5E-03	2.5E-03
Galbraith Lake	Monthly	1.3E-02	3.3E-01	8.2E-02	4.6E-04	2.0E+01	2.0E+00	6.2E+01	6.3E-05	9.7E-04	6.2E+01	2.1E-03	1.0E-04	7.2E-05	7.1E-05	3.6E-05	1.1E-03	4.8E-04	8.7E-05	1.2E-04	1.9E-04
	-1	1.1E-01	3.0E+00	7.3E-01	4.1E-03	1.8E+02	1.8E+01	5.5E+02	5.6E-04	8.6E-03	5.5E+02	1.9E-02	9.1E-04	6.3E-04	6.3E-04	3.2E-04	9.7E-03	4.2E-03	7.7E-04	1.0E-03	1.7E-03
	0	1.1E-01	2.9E+00	7.2E-01	4.0E-03	1.7E+02	1.8E+01	5.4E+02	5.5E-04	8.4E-03	5.4E+02	1.9E-02	9.0E-04	6.2E-04	6.2E-04	3.1E-04	9.5E-03	4.1E-03	7.5E-04	1.0E-03	1.7E-03
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.3E-01	3.5E+00	8.6E-01	4.8E-03	2.1E+02	2.1E+01	6.4E+02	6.6E-04	1.0E-02	6.4E+02	2.2E-02	1.1E-03	7.5E-04	7.4E-04	3.7E-04	1.1E-02	5.0E-03	9.0E-04	1.2E-03	2.0E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	2.4E-02	6.2E-01	1.5E-01	8.6E-04	3.7E+01	3.7E+00	1.1E+02	1.2E-04	1.8E-03	1.1E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.6E-05	2.0E-03	8.8E-04	1.6E-04	2.2E-04	3.6E-04
	W0	6.7E-02	1.8E+00	4.3E-01	2.4E-03	1.1E+02	1.1E+01	3.3E+02	3.3E-04	5.1E-03	3.3E+02	1.1E-02	5.5E-04	3.8E-04	3.7E-04	1.9E-04	5.8E-03	2.5E-03	4.6E-04	6.2E-04	1.0E-03
	S0.5	6.7E-02	1.8E+00	4.3E-01	2.4E-03	1.1E+02	1.1E+01	3.3E+02	3.3E-04	5.1E-03	3.3E+02	1.1E-02	5.5E-04	3.8E-04	3.7E-04	1.9E-04	5.8E-03	2.5E-03	4.6E-04	6.2E-04	1.0E-03
	W1	6.7E-02	1.8E+00	4.3E-01	2.4E-03	1.1E+02	1.1E+01	3.3E+02	3.3E-04	5.1E-03	3.3E+02	1.1E-02	5.5E-04	3.8E-04	3.7E-04	1.9E-04	5.8E-03	2.5E-03	4.6E-04	6.2E-04	1.0E-03
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.2E-01	5.8E+00	1.4E+00	8.1E-03	3.5E+02	3.5E+01	1.1E+03	1.1E-03	1.7E-02	1.1E+03	3.7E-02	1.8E-03	1.2E-03	1.2E-03	6.2E-04	1.9E-02	8.3E-03	1.5E-03	2.1E-03	3.3E-03
Dietrich	Monthly	1.4E-02	3.5E-01	8.9E-02	5.0E-04	2.2E+01	2.2E+00	6.7E+01	6.8E-05	1.0E-03	6.7E+01	2.3E-03	1.1E-04	7.7E-05	7.6E-05	3.8E-05	1.2E-03	5.1E-04	9.3E-05	1.3E-04	2.1E-04
	-1	1.2E-01	3.1E+00	7.9E-01	4.5E-03	1.9E+02	1.9E+01	6.0E+02	6.0E-04	9.2E-03	6.0E+02	2.0E-02	9.9E-04	6.8E-04	6.8E-04	3.4E-04	1.0E-02	4.5E-03	8.3E-04	1.1E-03	1.8E-03
	0	9.6E-02	2.5E+00	6.2E-01	3.5E-03	1.5E+02	1.5E+01	4.7E+02	4.8E-04	7.3E-03	4.7E+02	1.6E-02	7.8E-04	5.4E-04	5.3E-04	2.7E-04	8.2E-03	3.6E-03	6.5E-04	8.9E-04	1.4E-03
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.4E-01	3.7E+00	9.2E-01	5.3E-03	2.3E+02	2.3E+01	7.0E+02	7.1E-04	1.1E-02	7.0E+02	2.4E-02	1.2E-03	8.1E-04	8.0E-04	4.0E-04	1.2E-02	5.4E-03	9.7E-04	1.3E-03	2.2E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	2.5E-02	6.6E-01	1.6E-01	9.4E-04	4.0E+01	4.0E+00	1.2E+02	1.3E-04	1.9E-03	1.3E+02	4.3E-03	2.1E-04	1.4E-04	1.4E-04	7.1E-05	2.2E-03	9.5E-04	1.7E-04	2.4E-04	3.8E-04
	W0	7.3E-02	1.9E+00	4.7E-01	2.7E-03	1.1E+02	1.2E+01	3.6E+02	3.6E-04	5.5E-03	3.6E+02	1.2E-02	5.9E-04	4.1E-04	4.0E-04	2.0E-04	6.2E-03	2.7E-03	4.9E-04	6.7E-04	1.1E-03
	S0.5	7.3E-02	1.9E+00	4.7E-01	2.7E-03	1.1E+02	1.2E+01	3.6E+02	3.6E-04	5.5E-03	3.6E+02	1.2E-02	5.9E-04	4.1E-04	4.0E-04	2.0E-04	6.2E-03	2.7E-03	4.9E-04	6.7E-04	1.1E-03
	W1	4.9E-02	1.3E+00	3.2E-01	1.8E-03	7.7E+01	7.8E+00	2.4E+02	2.4E-04	3.7E-03	2.4E+02	8.2E-03	4.0E-04	2.8E-04	2.7E-04	1.4E-04	4.2E-03	1.8E-03	3.3E-04	4.5E-04	7.4E-04
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.2E-01	5.6E+00	1.4E+00	7.9E-03	3.4E+02	3.4E+01	1.1E+03	1.1E-03	1.6E-02	1.1E+03	3.6E-02	1.7E-03	1.2E-03	1.2E-03	6.0E-04	1.8E-02	8.1E-03	1.5E-03	2.0E-03	3.2E-03

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Fuel Truck Trip Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prospect	Monthly	8.1E-03	2.1E-01	5.2E-02	3.0E-04	1.3E+01	1.3E+00	4.0E+01	4.0E-05	6.1E-04	4.0E+01	1.3E-03	6.5E-05	4.5E-05	4.5E-05	2.3E-05	6.9E-04	3.0E-04	5.5E-05	7.5E-05	1.2E-04
	-1	5.6E-02	1.5E+00	3.6E-01	2.1E-03	8.9E+01	9.0E+00	2.8E+02	2.8E-04	4.3E-03	2.8E+02	9.4E-03	4.6E-04	3.2E-04	3.1E-04	1.6E-04	4.8E-03	2.1E-03	3.8E-04	5.2E-04	8.5E-04
	0	7.7E-02	2.0E+00	5.0E-01	2.8E-03	1.2E+02	1.2E+01	3.8E+02	3.8E-04	5.9E-03	3.8E+02	1.3E-02	6.3E-04	4.4E-04	4.3E-04	2.2E-04	6.6E-03	2.9E-03	5.3E-04	7.2E-04	1.2E-03
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	8.5E-02	2.2E+00	5.5E-01	3.1E-03	1.3E+02	1.4E+01	4.2E+02	4.2E-04	6.5E-03	4.2E+02	1.4E-02	6.9E-04	4.8E-04	4.7E-04	2.4E-04	7.3E-03	3.2E-03	5.8E-04	7.9E-04	1.3E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	4.3E-02	1.1E+00	2.8E-01	1.6E-03	6.7E+01	6.8E+00	2.1E+02	2.1E-04	3.2E-03	2.1E+02	7.1E-03	3.5E-04	2.4E-04	2.4E-04	1.2E-04	3.7E-03	1.6E-03	2.9E-04	4.0E-04	6.4E-04
	S0.5	4.3E-02	1.1E+00	2.8E-01	1.6E-03	6.7E+01	6.8E+00	2.1E+02	2.1E-04	3.2E-03	2.1E+02	7.1E-03	3.5E-04	2.4E-04	2.4E-04	1.2E-04	3.7E-03	1.6E-03	2.9E-04	4.0E-04	6.4E-04
	W1	4.3E-02	1.1E+00	2.8E-01	1.6E-03	6.7E+01	6.8E+00	2.1E+02	2.1E-04	3.2E-03	2.1E+02	7.1E-03	3.5E-04	2.4E-04	2.4E-04	1.2E-04	3.7E-03	1.6E-03	2.9E-04	4.0E-04	6.4E-04
	S1.5	6.9E-03	1.8E-01	4.5E-02	2.5E-04	1.1E+01	1.1E+00	3.4E+01	3.4E-05	5.3E-04	3.4E+01	1.2E-03	5.6E-05	3.9E-05	3.8E-05	1.9E-05	5.9E-04	2.6E-04	4.7E-05	6.4E-05	1.0E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.3E-01	3.5E+00	8.6E-01	4.9E-03	2.1E+02	2.1E+01	6.6E+02	6.6E-04	1.0E-02	6.6E+02	2.2E-02	1.1E-03	7.5E-04	7.4E-04	3.7E-04	1.1E-02	5.0E-03	9.1E-04	1.2E-03	2.0E-03
Five Mile	Monthly	4.5E-03	1.2E-01	2.9E-02	1.7E-04	7.1E+00	7.2E-01	2.2E+01	2.2E-05	3.4E-04	2.2E+01	7.5E-04	3.7E-05	2.5E-05	2.5E-05	1.3E-05	3.9E-04	1.7E-04	3.1E-05	4.2E-05	6.8E-05
	-1	2.4E-02	6.2E-01	1.5E-01	8.8E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	0	4.7E-02	1.2E+00	3.0E-01	1.7E-03	7.4E+01	7.5E+00	2.3E+02	2.3E-04	3.6E-03	2.3E+02	7.9E-03	3.8E-04	2.6E-04	2.6E-04	1.3E-04	4.0E-03	1.8E-03	3.2E-04	4.4E-04	7.1E-04
	1	3.9E-02	1.0E+00	2.5E-01	1.4E-03	6.2E+01	6.2E+00	1.9E+02	2.0E-04	3.0E-03	1.9E+02	6.6E-03	3.2E-04	2.2E-04	2.2E-04	1.1E-04	3.4E-03	1.5E-03	2.7E-04	3.6E-04	5.9E-04
	2	4.8E-02	1.2E+00	3.1E-01	1.8E-03	7.5E+01	7.6E+00	2.3E+02	2.4E-04	3.6E-03	2.3E+02	8.0E-03	3.9E-04	2.7E-04	2.7E-04	1.3E-04	4.1E-03	1.8E-03	3.2E-04	4.4E-04	7.2E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.6E-02	4.2E-01	1.0E-01	5.9E-04	2.5E+01	2.6E+00	7.9E+01	8.0E-05	1.2E-03	7.9E+01	2.7E-03	1.3E-04	9.1E-05	9.0E-05	4.5E-05	1.4E-03	6.0E-04	1.1E-04	1.5E-04	2.4E-04
	S0.5	2.4E-02	6.2E-01	1.5E-01	8.8E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	W1	2.4E-02	6.2E-01	1.5E-01	8.8E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	S1.5	2.4E-02	6.2E-01	1.5E-01	8.8E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	W2	2.4E-02	6.2E-01	1.5E-01	8.8E-04	3.8E+01	3.8E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	S2.5	1.1E-01	2.8E+00	7.1E-01	4.1E-03	1.7E+02	1.7E+01	5.4E+02	5.5E-04	8.4E-03	5.4E+02	1.8E-02	8.9E-04	6.2E-04	6.1E-04	3.1E-04	9.4E-03	4.1E-03	7.5E-04	1.0E-03	1.7E-03
Livengood	Monthly	1.8E-03	4.7E-02	1.2E-02	6.7E-05	2.9E+00	2.9E-01	8.9E+00	9.1E-06	1.4E-04	9.0E+00	3.0E-04	1.5E-05	1.0E-05	1.0E-05	5.1E-06	1.6E-04	6.8E-05	1.2E-05	1.7E-05	2.7E-05
	-1	1.8E-03	4.7E-02	1.2E-02	6.7E-05	2.9E+00	2.9E-01	8.9E+00	9.1E-06	1.4E-04	9.0E+00	3.0E-04	1.5E-05	1.0E-05	1.0E-05	5.1E-06	1.6E-04	6.8E-05	1.2E-05	1.7E-05	2.7E-05
	0	1.9E-02	4.9E-01	1.2E-01	7.0E-04	3.0E+01	3.0E+00	9.3E+01	9.4E-05	1.4E-03	9.3E+01	3.2E-03	1.5E-04	1.1E-04	1.1E-04	5.3E-05	1.6E-03	7.1E-04	1.3E-04	1.8E-04	2.9E-04
	1	1.6E-02	4.1E-01	1.0E-01	5.8E-04	2.5E+01	2.5E+00	7.8E+01	7.9E-05	1.2E-03	7.8E+01	2.7E-03	1.3E-04	9.0E-05	8.8E-05	4.5E-05	1.4E-03	5.9E-04	1.1E-04	1.5E-04	2.4E-04
	2	1.9E-02	5.0E-01	1.2E-01	7.1E-04	3.0E+01	3.1E+00	9.5E+01	9.6E-05	1.5E-03	9.5E+01	3.2E-03	1.6E-04	1.1E-04	1.1E-04	5.4E-05	1.7E-03	7.2E-04	1.3E-04	1.8E-04	2.9E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	8.1E-03	2.1E-01	5.2E-02	3.0E-04	1.3E+01	1.3E+00	4.0E+01	4.0E-05	6.1E-04	4.0E+01	1.4E-03	6.6E-05	4.6E-05	4.5E-05	2.3E-05	6.9E-04	3.0E-04	5.5E-05	7.5E-05	1.2E-04
	W1	9.6E-03	2.5E-01	6.2E-02	3.5E-04	1.5E+01	1.5E+00	4.7E+01	4.8E-05	7.3E-04	4.7E+01	1.6E-03	7.8E-05	5.4E-05	5.4E-05	2.7E-05	8.3E-04	3.6E-04	6.6E-05	8.9E-05	1.5E-04
	S1.5	9.6E-03	2.5E-01	6.2E-02	3.5E-04	1.5E+01	1.5E+00	4.7E+01	4.8E-05	7.3E-04	4.7E+01	1.6E-03	7.8E-05	5.4E-05	5.4E-05	2.7E-05	8.3E-04	3.6E-04	6.6E-05	8.9E-05	1.5E-04
	W2	9.6E-03	2.5E-01	6.2E-02	3.5E-04	1.5E+01	1.5E+00	4.7E+01	4.8E-05	7.3E-04	4.7E+01	1.6E-03	7.8E-05	5.4E-05	5.4E-05	2.7E-05	8.3E-04	3.6E-04	6.6E-05	8.9E-05	1.5E-04
	S2.5	3.7E-02	9.5E-01	2.4E-01	1.4E-03	5.8E+01	5.8E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.1E-03	3.0E-04	2.1E-04	2.0E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.5E-04
Dunbar	Monthly	1.7E-02	4.4E-01	1.1E-01	6.2E-04	2.7E+01	2.7E+00	8.3E+01	8.4E-05	1.3E-03	8.3E+01	2.8E-03	1.4E-04	9.5E-05	9.4E-05	4.7E-05	1.4E-03	6.3E-04	1.1E-04	1.6E-04	2.5E-04
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	8.9E-02	2.3E+00	5.8E-01	3.3E-03	1.4E+02	1.4E+01	4.4E+02	4.4E-04	6.8E-03	4.4E+02	1.5E-02	7.2E-04	5.0E-04	5.0E-04	2.5E-04	7.6E-03	3.3E-03	6.1E-04	8.3E-04	1.3E-03
	1	4.6E-02	1.2E+00	3.0E-01	1.7E-03	7.2E+01	7.3E+00	2.3E+02	2.3E-04	3.5E-03	2.3E+02	7.6E-03	3.7E-04	2.6E-04	2.5E-04	1.3E-04	3.9E-03	1.7E-03	3.1E-04	4.2E-04	6.9E-04
	2	1.3E-01	3.4E+00	8.6E-01	4.9E-03	2.1E+02	2.1E+01	6.5E+02	6.6E-04	1.0E-02	6.5E+02	2.2E-02	1.1E-03	7.5E-04	7.4E-04	3.7E-04	1.1E-02	5.0E-03	9.0E-04	1.2E-03	2.0E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	6.0E-02	1.6E+00	3.9E-01	2.2E-03	9.5E+01	9.6E+00	3.0E+02	3.0E-04	4.6E-03	3.0E+02	1.0E-02	4.9E-04	3.4E-04	3.3E-04	1.7E-04	5.2E-03	2.3E-03	4.1E-04	5.6E-04	9.1E-04
	S1.5	7.5E-02	1.9E+00	4.8E-01	2.8E-03	1.2E+02	1.2E+01	3.7E+02	3.7E-04	5.7E-03	3.7E+02	1.2E-02	6.1E-04	4.2E-04	4.2E-04	2.1E-04	6.4E-03	2.8E-03	5.1E-04	6.9E-04	1.1E-03
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.3E-01	3.4E+00	8.6E-01	4.9E-03	2.1E+02	2.1E+01	6.5E+02	6.6E-04	1.0E-02	6.5E+02	2.2E-02	1.1E-03	7.5E-04	7.4E-04	3.7E-04	1.1E-02	5.0E-03	9.0E-04	1.2E-03	2.0E-03
Healy	Monthly	1.4E-02	3.6E-01	8.9E-02	5.1E-04	2.2E+01	2.2E+00	6.7E+01	6.9E-05	1.1E-03	6.7E+01	2.3E-03	1.1E-04	7.8E-05	7.7E-05	3.9E-05	1.2E-03	5.2E-04	9.4E-05	1.3E-04	2.1E-04
	-1	9.7E-02	2.5E+00	6.2E-01	3.5E-03	1.5E+02	1.5E+01	4.7E+02	4.8E-04	7.4E-03	4.7E+02	1.6E-02	7.8E-04	5.4E-04	5.4E-04	2.7E-04	8.3E-03	3.6E-03	6.6E-04	9.0E-04	1.5E-03
	0	1.3E-01	3.4E+00	8.5E-01	4.8E-03	2.1E+02	2.1E+01	6.5E+02	6.6E-04	1.0E-02	6.5E+02	2.2E-02	1.1E-03	7.5E-04	7.4E-04	3.7E-04	1.1E-02	4.9E-03	9.0E-04	1.2E-03	2.0E-03
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.4E-01	3.8E+00	9.3E-01	5.3E-03	2.3E+02	2.3E+01	7.0E+02	7.2E-04	1.1E-02	7.0E+02	2.4E-02	1.2E-03	8.1E-04	8.0E-04	4.0E-04	1.2E-02	5.4E-03	9.8E-04	1.3E-03	2.2E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	7.3E-02	1.9E+00	4.7E-01	2.7E-03	1.2E+02	1.2E+01	3.6E+02	3.6E-04	5.6E-03	3.6E+02	1.2E-02	5.9E-04	4.1E-04	4.1E-04	2.0E-04	6.3E-03	2.7E-03	5.0E-04	6.8E-04	1.1E-03
	S0.5	7.3E-02	1.9E+00	4.7E-01	2.7E-03	1.2E+02	1.2E+01	3.6E+02	3.6E-04	5.6E-03	3.6E+02	1.2E-02	5.9E-04	4.1E-04	4.1E-04	2.0E-04	6.3E-03	2.7E-03	5.0E-04	6.8E-04	1.1E-03
	W1	7.3E-02	1.9E+00	4.7E-01	2.7E-03	1.2E+02	1.2E+01	3.6E+02	3.6E-04	5.6E-03	3.6E+02	1.2E-02	5.9E-04	4.1E-04	4.1E-04	2.0E-04	6.3E-03	2.7E-03	5.0E-04	6.8E-04	1.1E-03
	S1.5	1.2E-02	3.1E-01	7.7E-02	4.3E-04	1.9E+01	1.9E+00	5.8E+01	5.9E-05	9.0E-04	5.8E+01	2.0E-03	9.6E-05	6.7E-05	6.6E-05	3.3E-05	1.0E-03	4.4E-04	8.1E-05	1.1E-04	1.8E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.3E-01	6.0E+00	1.5E+00	8.4E-03	3.6E+02	3.6E+01	1.1E+03	1.1E-03	1.7E-02	1.1E+03	3.8E-02	1.9E-03	1.3E-03	1.3E-03	6.4E-04	2.0E-02	8.6E-03	1.6E-03	2.1E-03	3.4E-03

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Fuel Truck Trip Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
	Monthly	1.2E-02	3.2E-01	7.9E-02	4.5E-04	1.9E+01	1.9E+00	6.0E+01	6.1E-05	9.3E-04	6.0E+01	2.1E-03	1.0E-04	6.9E-05	6.8E-05	3.4E-05	1.1E-03	4.6E-04	8.4E-05	1.1E-04	1.8E-04
	-1	6.5E-02	1.7E+00	4.2E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.7E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.8E-04
	0	1.3E-01	3.3E+00	8.3E-01	4.7E-03	2.0E+02	2.0E+01	6.2E+02	6.4E-04	9.7E-03	6.3E+02	2.1E-02	1.0E-03	7.2E-04	7.1E-04	3.6E-04	1.1E-02	4.8E-03	8.7E-04	1.2E-03	1.9E-03
	1	1.1E-01	2.8E+00	6.9E-01	3.9E-03	1.7E+02	1.7E+01	5.2E+02	5.3E-04	8.1E-03	5.2E+02	1.8E-02	8.7E-04	6.0E-04	5.9E-04	3.0E-04	9.2E-03	4.0E-03	7.3E-04	9.9E-04	1.6E-03
	2	1.3E-01	3.4E+00	8.4E-01	4.8E-03	2.0E+02	2.1E+01	6.3E+02	6.4E-04	9.9E-03	6.3E+02	2.2E-02	1.1E-03	7.3E-04	7.2E-04	3.6E-04	1.1E-02	4.9E-03	8.8E-04	1.2E-03	2.0E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Cantwell	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	4.4E-02	1.1E+00	2.8E-01	1.6E-03	6.9E+01	7.0E+00	2.1E+02	2.2E-04	3.3E-03	2.1E+02	7.3E-03	3.6E-04	2.5E-04	2.4E-04	1.2E-04	3.8E-03	1.6E-03	3.0E-04	4.1E-04	6.6E-04
	S0.5	6.5E-02	1.7E+00	4.2E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.7E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.8E-04
	W1	6.5E-02	1.7E+00	4.2E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.7E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.8E-04
	S1.5	6.5E-02	1.7E+00	4.2E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.7E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.8E-04
	W2	6.5E-02	1.7E+00	4.2E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.2E-04	4.9E-03	3.2E+02	1.1E-02	5.3E-04	3.7E-04	3.6E-04	1.8E-04	5.6E-03	2.4E-03	4.4E-04	6.0E-04	9.8E-04
	S2.5	3.0E-01	7.8E+00	1.9E+00	1.1E-02	4.7E+02	4.8E+01	1.5E+03	1.5E-03	2.3E-02	1.5E+03	5.0E-02	2.4E-03	1.7E-03	1.7E-03	8.4E-04	2.6E-02	1.1E-02	2.0E-03	2.8E-03	4.5E-03
	Monthly	9.2E-03	2.4E-01	5.9E-02	3.3E-04	1.4E+01	1.5E+00	4.4E+01	4.5E-05	7.0E-04	4.4E+01	1.5E-03	7.4E-05	5.2E-05	5.1E-05	2.6E-05	7.9E-04	3.4E-04	6.2E-05	8.5E-05	1.4E-04
	-1	4.1E-02	1.1E+00	2.6E-01	1.5E-03	6.4E+01	6.4E+00	2.0E+02	2.0E-04	3.1E-03	2.0E+02	6.8E-03	3.3E-04	2.3E-04	2.3E-04	1.1E-04	3.5E-03	1.5E-03	2.8E-04	3.8E-04	6.1E-04
	0	8.8E-02	2.3E+00	5.7E-01	3.2E-03	1.4E+02	1.4E+01	4.3E+02	4.3E-04	6.7E-03	4.3E+02	1.5E-02	7.1E-04	4.9E-04	4.9E-04	2.5E-04	7.5E-03	3.3E-03	6.0E-04	8.1E-04	1.3E-03
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	9.5E-02	2.5E+00	6.2E-01	3.5E-03	1.5E+02	1.5E+01	4.6E+02	4.7E-04	7.3E-03	4.6E+02	1.6E-02	7.7E-04	5.4E-04	5.3E-04	2.7E-04	8.2E-03	3.6E-03	6.5E-04	8.9E-04	1.4E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Swan Lake	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	2.5E-02	6.4E-01	1.6E-01	9.0E-04	3.9E+01	3.9E+00	1.2E+02	1.2E-04	1.9E-03	1.2E+02	4.2E-03	2.0E-04	1.4E-04	1.4E-04	7.0E-05	2.1E-03	9.3E-04	1.7E-04	2.3E-04	3.7E-04
	S0.5	4.8E-02	1.3E+00	3.1E-01	1.8E-03	7.6E+01	7.7E+00	2.3E+02	2.4E-04	3.7E-03	2.4E+02	8.1E-03	3.9E-04	2.7E-04	2.7E-04	1.4E-04	4.2E-03	1.8E-03	3.3E-04	4.5E-04	7.3E-04
	W1	4.8E-02	1.3E+00	3.1E-01	1.8E-03	7.6E+01	7.7E+00	2.3E+02	2.4E-04	3.7E-03	2.4E+02	8.1E-03	3.9E-04	2.7E-04	2.7E-04	1.4E-04	4.2E-03	1.8E-03	3.3E-04	4.5E-04	7.3E-04
	S1.5	7.8E-03	2.0E-01	5.1E-02	2.9E-04	1.2E+01	1.2E+00	3.8E+01	3.9E-05	6.0E-04	3.8E+01	1.3E-03	6.4E-05	4.4E-05	4.4E-05	2.2E-05	6.7E-04	2.9E-04	5.3E-05	7.3E-05	1.2E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.3E-01	3.3E+00	8.3E-01	4.7E-03	2.0E+02	2.0E+01	6.2E+02	6.4E-04	9.8E-03	6.2E+02	2.1E-02	1.0E-03	7.2E-04	7.1E-04	3.6E-04	1.1E-02	4.8E-03	8.7E-04	1.2E-03	1.9E-03
	Monthly	1.1E-02	2.8E-01	7.0E-02	3.9E-04	1.7E+01	1.7E+00	5.2E+01	5.3E-05	8.2E-04	5.2E+01	1.8E-03	8.7E-05	6.1E-05	6.0E-05	3.0E-05	9.2E-04	4.0E-04	7.3E-05	1.0E-04	1.6E-04
	-1	6.6E-02	1.7E+00	4.3E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.3E-04	5.0E-03	3.2E+02	1.1E-02	5.4E-04	3.7E-04	3.7E-04	1.9E-04	5.7E-03	2.5E-03	4.5E-04	6.1E-04	9.9E-04
	0	1.1E-01	2.9E+00	7.3E-01	4.1E-03	1.8E+02	1.8E+01	5.4E+02	5.6E-04	8.5E-03	5.5E+02	1.9E-02	9.1E-04	6.3E-04	6.2E-04	3.1E-04	9.6E-03	4.2E-03	7.6E-04	1.0E-03	1.7E-03
	1	6.6E-02	1.7E+00	4.3E-01	2.4E-03	1.0E+02	1.0E+01	3.2E+02	3.3E-04	5.0E-03	3.2E+02	1.1E-02	5.4E-04	3.7E-04	3.7E-04	1.9E-04	5.7E-03	2.5E-03	4.5E-04	6.1E-04	9.9E-04
	2	1.1E-01	2.9E+00	7.4E-01	4.1E-03	1.8E+02	1.8E+01	5.5E+02	5.6E-04	8.7E-03	5.5E+02	1.9E-02	9.2E-04	6.4E-04	6.3E-04	3.2E-04	9.8E-03	4.3E-03	7.7E-04	1.1E-03	1.7E-03
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Rustic Wilderness	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	4.8E-02	1.2E+00	3.1E-01	1.7E-03	7.5E+01	7.6E+00	2.3E+02	2.4E-04	3.6E-03	2.3E+02	8.0E-03	3.9E-04	2.7E-04	2.7E-04	1.3E-04	4.1E-03	1.8E-03	3.2E-04	4.4E-04	7.2E-04
	S0.5	5.7E-02	1.5E+00	3.7E-01	2.1E-03	9.0E+01	9.0E+00	2.8E+02	2.8E-04	4.3E-03	2.8E+02	9.5E-03	4.6E-04	3.2E-04	3.2E-04	1.6E-04	4.9E-03	2.1E-03	3.9E-04	5.3E-04	8.6E-04
	W1	5.7E-02	1.5E+00	3.7E-01	2.1E-03	9.0E+01	9.0E+00	2.8E+02	2.8E-04	4.3E-03	2.8E+02	9.5E-03	4.6E-04	3.2E-04	3.2E-04	1.6E-04	4.9E-03	2.1E-03	3.9E-04	5.3E-04	8.6E-04
	S1.5	5.7E-02	1.5E+00	3.7E-01	2.1E-03	9.0E+01	9.0E+00	2.8E+02	2.8E-04	4.3E-03	2.8E+02	9.5E-03	4.6E-04	3.2E-04	3.2E-04	1.6E-04	4.9E-03	2.1E-03	3.9E-04	5.3E-04	8.6E-04
	W2	2.9E-02	7.6E-01	1.9E-01	1.1E-03	4.6E+01	4.6E+00	1.4E+02	1.5E-04	2.2E-03	1.4E+02	4.9E-03	2.4E-04	1.6E-04	1.6E-04	8.2E-05	2.5E-03	1.1E-03	2.0E-04	2.7E-04	4.4E-04
	S2.5	2.4E-01	6.3E+00	1.6E+00	8.9E-03	3.9E+02	3.9E+01	1.2E+03	1.2E-03	1.9E-02	1.2E+03	4.1E-02	2.0E-03	1.4E-03	1.4E-03	6.9E-04	2.1E-02	9.1E-03	1.7E-03	2.3E-03	3.7E-03

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Refuse Truck Trip Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prudhoe Bay	Monthly	1.8E-05	4.8E-04	1.2E-04	6.7E-07	2.9E-02	2.9E-03	8.9E-02	9.1E-08	1.4E-06	8.9E-02	3.1E-06	1.5E-07	1.0E-07	1.0E-07	5.1E-08	1.6E-06	6.9E-07	1.2E-07	1.7E-07	2.8E-07
	-1	1.6E-04	4.2E-03	1.0E-03	5.9E-06	2.5E-01	2.6E-02	7.8E-01	8.0E-07	1.2E-05	7.8E-01	2.7E-05	1.3E-06	9.1E-07	9.0E-07	4.5E-07	1.4E-05	6.0E-06	1.1E-06	1.5E-06	2.4E-06
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.6E-04	4.2E-03	1.0E-03	5.9E-06	2.5E-01	2.6E-02	7.8E-01	8.0E-07	1.2E-05	7.8E-01	2.7E-05	1.3E-06	9.1E-07	9.0E-07	4.5E-07	1.4E-05	6.0E-06	1.1E-06	1.5E-06	2.4E-06
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	3.3E-05	8.7E-04	2.1E-04	1.2E-06	5.2E-02	5.2E-03	1.6E-01	1.6E-07	2.5E-06	1.6E-01	5.5E-06	2.7E-07	1.9E-07	1.8E-07	9.3E-08	2.8E-06	1.2E-06	2.2E-07	3.1E-07	5.0E-07
	W0	9.9E-05	2.6E-03	6.4E-04	3.6E-06	1.6E-01	1.6E-02	4.8E-01	4.9E-07	7.5E-06	4.8E-01	1.7E-05	8.0E-07	5.6E-07	5.5E-07	2.8E-07	8.5E-06	3.7E-06	6.7E-07	9.2E-07	1.5E-06
	S0.5	3.3E-05	8.7E-04	2.1E-04	1.2E-06	5.2E-02	5.2E-03	1.6E-01	1.6E-07	2.5E-06	1.6E-01	5.5E-06	2.7E-07	1.9E-07	1.8E-07	9.3E-08	2.8E-06	1.2E-06	2.2E-07	3.1E-07	5.0E-07
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.6E-04	4.2E-03	1.0E-03	5.9E-06	2.5E-01	2.6E-02	7.8E-01	8.0E-07	1.2E-05	7.8E-01	2.7E-05	1.3E-06	9.1E-07	9.0E-07	4.5E-07	1.4E-05	6.0E-06	1.1E-06	1.5E-06	2.4E-06
Franklin Bluffs	Monthly	2.1E-04	5.4E-03	1.3E-03	7.5E-06	3.2E-01	3.3E-02	1.0E+00	1.0E-06	1.6E-05	1.0E+00	3.5E-05	1.7E-06	1.2E-06	1.1E-06	5.8E-07	1.8E-05	7.7E-06	1.4E-06	1.9E-06	3.1E-06
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	1.1E-03	2.9E-02	7.2E-03	4.1E-05	1.7E+00	1.8E-01	5.4E+00	5.5E-06	8.5E-05	5.4E+00	1.9E-04	9.0E-06	6.3E-06	6.2E-06	3.1E-06	9.6E-05	4.2E-05	7.6E-06	1.0E-05	1.7E-05
	1	1.3E-03	3.4E-02	8.3E-03	4.7E-05	2.0E+00	2.0E-01	6.2E+00	6.4E-06	9.7E-05	6.2E+00	2.1E-04	1.0E-05	7.2E-06	7.1E-06	3.6E-06	1.1E-04	4.8E-05	8.7E-06	1.2E-05	1.9E-05
	2	2.2E-03	5.8E-02	1.4E-02	8.0E-05	3.4E+00	3.5E-01	1.1E+01	1.1E-05	1.7E-04	1.1E+01	3.7E-04	1.8E-05	1.2E-05	1.2E-05	6.1E-06	1.9E-04	8.2E-05	1.5E-05	2.0E-05	3.3E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	7.4E-04	2.0E-02	4.8E-03	2.7E-05	1.2E+00	1.2E-01	3.6E+00	3.7E-06	5.7E-05	3.6E+00	1.2E-04	6.0E-06	4.2E-06	4.1E-06	2.1E-06	6.4E-05	2.8E-05	5.1E-06	6.9E-06	1.1E-05
	S1.5	1.1E-03	2.8E-02	6.9E-03	3.9E-05	1.7E+00	1.7E-01	5.2E+00	5.3E-06	8.2E-05	5.2E+00	1.8E-04	8.7E-06	6.0E-06	6.0E-06	3.0E-06	9.2E-05	4.0E-05	7.3E-06	1.0E-05	1.6E-05
	W2	5.8E-04	1.5E-02	3.7E-03	2.1E-05	9.1E-01	9.1E-02	2.8E+00	2.9E-06	4.4E-05	2.8E+00	9.7E-05	4.7E-06	3.3E-06	3.2E-06	1.6E-06	5.0E-05	2.2E-05	3.9E-06	5.4E-06	8.7E-06
	S2.5	2.4E-03	6.2E-02	1.5E-02	8.6E-05	3.7E+00	3.7E-01	1.1E+01	1.2E-05	1.8E-04	1.1E+01	3.9E-04	1.9E-05	1.3E-05	1.3E-05	6.6E-06	2.0E-04	8.8E-05	1.6E-05	2.2E-05	3.5E-05
Happy Valley	Monthly	2.5E-04	6.6E-03	1.6E-03	9.2E-06	4.0E-01	4.0E-02	1.2E+00	1.3E-06	1.9E-05	1.2E+00	4.2E-05	2.0E-06	1.4E-06	1.4E-06	7.1E-07	2.2E-05	9.4E-06	1.7E-06	2.3E-06	3.8E-06
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	2.0E-03	5.3E-02	1.3E-02	7.4E-05	3.2E+00	3.2E-01	9.8E+00	1.0E-05	1.5E-04	9.8E+00	3.4E-04	1.6E-05	1.1E-05	1.1E-05	5.7E-06	1.7E-04	7.5E-05	1.4E-05	1.9E-05	3.0E-05
	1	2.2E-03	5.8E-02	1.4E-02	8.1E-05	3.5E+00	3.5E-01	1.1E+01	1.1E-05	1.7E-04	1.1E+01	3.7E-04	1.8E-05	1.3E-05	1.2E-05	6.2E-06	1.9E-04	8.3E-05	1.5E-05	2.1E-05	3.3E-05
	2	2.7E-03	7.0E-02	1.7E-02	9.7E-05	4.2E+00	4.2E-01	1.3E+01	1.3E-05	2.0E-04	1.3E+01	4.5E-04	2.2E-05	1.5E-05	1.5E-05	7.5E-06	2.3E-04	1.0E-04	1.8E-05	2.5E-05	4.0E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	2.5E-04	6.6E-03	1.6E-03	9.2E-06	4.0E-01	4.0E-02	1.2E+00	1.3E-06	1.9E-05	1.2E+00	4.2E-05	2.0E-06	1.4E-06	1.4E-06	7.1E-07	2.2E-05	9.4E-06	1.7E-06	2.3E-06	3.8E-06
	W1	1.4E-03	3.6E-02	8.8E-03	5.0E-05	2.1E+00	2.2E-01	6.6E+00	6.8E-06	1.0E-04	6.6E+00	2.3E-04	1.1E-05	7.7E-06	7.6E-06	3.8E-06	1.2E-04	5.1E-05	9.3E-06	1.3E-05	2.0E-05
	S1.5	1.3E-03	3.4E-02	8.5E-03	4.8E-05	2.1E+00	2.1E-01	6.4E+00	6.5E-06	1.0E-04	6.4E+00	2.2E-04	1.1E-05	7.4E-06	7.3E-06	3.7E-06	1.1E-04	4.9E-05	8.9E-06	1.2E-05	2.0E-05
	W2	1.4E-03	3.6E-02	8.8E-03	5.0E-05	2.1E+00	2.2E-01	6.6E+00	6.8E-06	1.0E-04	6.6E+00	2.3E-04	1.1E-05	7.7E-06	7.6E-06	3.8E-06	1.2E-04	5.1E-05	9.3E-06	1.3E-05	2.0E-05
	S2.5	4.2E-03	1.1E-01	2.7E-02	1.5E-04	6.6E+00	6.6E-01	2.0E+01	2.1E-05	3.2E-04	2.0E+01	7.0E-04	3.4E-05	2.4E-05	2.3E-05	1.2E-05	3.6E-04	1.6E-04	2.9E-05	3.9E-05	6.3E-05
Galbraith Lake	Monthly	1.8E-05	4.8E-04	1.2E-04	6.7E-07	2.9E-02	2.9E-03	8.9E-02	9.1E-08	1.4E-06	8.9E-02	3.1E-06	1.5E-07	1.0E-07	1.0E-07	5.1E-08	1.6E-06	6.9E-07	1.2E-07	1.7E-07	2.8E-07
	-1	1.6E-04	4.2E-03	1.0E-03	5.9E-06	2.5E-01	2.6E-02	7.8E-01	8.0E-07	1.2E-05	7.8E-01	2.7E-05	1.3E-06	9.1E-07	9.0E-07	4.5E-07	1.4E-05	6.0E-06	1.1E-06	1.5E-06	2.4E-06
	0	1.6E-04	4.2E-03	1.0E-03	5.9E-06	2.5E-01	2.6E-02	7.8E-01	8.0E-07	1.2E-05	7.8E-01	2.7E-05	1.3E-06	9.1E-07	9.0E-07	4.5E-07	1.4E-05	6.0E-06	1.1E-06	1.5E-06	2.4E-06
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.9E-04	5.1E-03	1.3E-03	7.1E-06	3.1E-01	3.1E-02	9.4E-01	9.7E-07	1.5E-05	9.4E-01	3.3E-05	1.6E-06	1.1E-06	1.1E-06	5.5E-07	1.7E-05	7.3E-06	1.3E-06	1.8E-06	2.9E-06
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	3.3E-05	8.7E-04	2.1E-04	1.2E-06	5.2E-02	5.2E-03	1.6E-01	1.6E-07	2.5E-06	1.6E-01	5.5E-06	2.7E-07	1.9E-07	1.8E-07	9.3E-08	2.8E-06	1.2E-06	2.2E-07	3.1E-07	5.0E-07
	W0	9.9E-05	2.6E-03	6.4E-04	3.6E-06	1.6E-01	1.6E-02	4.8E-01	4.9E-07	7.5E-06	4.8E-01	1.7E-05	8.0E-07	5.6E-07	5.5E-07	2.8E-07	8.5E-06	3.7E-06	6.7E-07	9.2E-07	1.5E-06
	S0.5	9.5E-05	2.5E-03	6.2E-04	3.5E-06	1.5E-01	1.5E-02	4.6E-01	4.7E-07	7.3E-06	4.6E-01	1.6E-05	7.7E-07	5.4E-07	5.3E-07	2.7E-07	8.2E-06	3.6E-06	6.5E-07	8.8E-07	1.4E-06
	W1	9.9E-05	2.6E-03	6.4E-04	3.6E-06	1.6E-01	1.6E-02	4.8E-01	4.9E-07	7.5E-06	4.8E-01	1.7E-05	8.0E-07	5.6E-07	5.5E-07	2.8E-07	8.5E-06	3.7E-06	6.7E-07	9.2E-07	1.5E-06
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	3.2E-04	8.5E-03	2.1E-03	1.2E-05	5.1E-01	5.1E-02	1.6E+00	1.6E-06	2.5E-05	1.6E+00	5.4E-05	2.6E-06	1.8E-06	1.8E-06	9.1E-07	2.8E-05	1.2E-05	2.2E-06	3.0E-06	4.9E-06
Dietrich	Monthly	3.1E-04	7.9E-03	2.0E-03	1.1E-05	4.8E-01	4.9E-02	1.5E+00	1.5E-06	2.3E-05	1.5E+00	5.1E-05	2.5E-06	1.7E-06	1.7E-06	8.6E-07	2.6E-05	1.1E-05	2.1E-06	2.9E-06	4.6E-06
	-1	2.7E-03	7.0E-02	1.7E-02	1.0E-04	4.2E+00	4.3E-01	1.3E+01	1.3E-05	2.1E-04	1.3E+01	4.5E-04	2.2E-05	1.5E-05	1.5E-05	7.6E-06	2.3E-04	1.0E-04	1.8E-05	2.5E-05	4.1E-05
	0	2.2E-03	5.6E-02	1.4E-02	7.9E-05	3.4E+00	3.4E-01	1.1E+01	1.1E-05	1.6E-04	1.1E+01	3.6E-04	1.7E-05	1.2E-05	1.2E-05	6.0E-06	1.8E-04	8.0E-05	1.5E-05	2.0E-05	3.2E-05
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	3.3E-03	8.4E-02	2.1E-02	1.2E-04	5.1E+00	5.2E-01	1.6E+01	1.6E-05	2.5E-04	1.6E+01	5.4E-04	2.6E-05	1.8E-05	1.8E-05	9.1E-06	2.8E-04	1.2E-04	2.2E-05	3.0E-05	4.9E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	5.5E-04	1.4E-02	3.6E-03	2.0E-05	8.7E-01	8.8E-02	2.7E+00	2.7E-06	4.2E-05	2.7E+00	9.2E-05	4.5E-06	3.1E-06	3.1E-06	1.6E-06	4.7E-05	2.1E-05	3.8E-06	5.1E-06	8.3E-06
	W0	1.7E-03	4.3E-02	1.1E-02	6.1E-05	2.6E+00	2.6E-01	8.1E+00	8.2E-06	1.3E-04	8.1E+00	2.8E-04	1.3E-05	9.4E-06	9.2E-06	4.7E-06	1.4E-04	6.2E-05	1.1E-05	1.5E-05	2.5E-05
	S0.5	1.6E-03	4.1E-02	1.0E-02	5.9E-05	2.5E+00	2.5E-01	7.8E+00	7.9E-06	1.2E-04	7.8E+00	2.7E-04	1.3E-05	9.0E-06	8.9E-06	4.5E-06	1.4E-04	6.0E-05	1.1E-05	1.5E-05	2.4E-05
	W1	1.1E-03	2.9E-02	7.2E-03	4.1E-05	1.7E+00	1.8E-01	5.4E+00	5.5E-06	8.4E-05	5.4E+00	1.8E-04	9.0E-06	6.2E-06	6.2E-06	3.1E-06	9.5E-05	4.1E-05	7.5E-06	1.0E-05	1.7E-05
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	4.9E-03	1.3E-01	3.1E-02	1.8E-04	7.6E+00	7.7E-01	2.4E+01	2.4E-05	3.7E-04	2.4E+01	8.1E-04	3.9E-05	2.7E-05	2.7E-05	1.4E-05	4.2E-04	1.8E-04	3.3E-05	4.5E-05	7.3E-05

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Refuse Truck Trip Emissions Summary for areas outside the $PM_{2.5}$ NAA

		Emissions (tons)																			
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prospect	Monthly	1.5E-04	3.9E-03	9.8E-04	5.6E-06	2.4E-01	2.4E-02	7.4E-01	7.5E-07	1.2E-05	7.4E-01	2.5E-05	1.2E-06	8.5E-07	8.4E-07	4.2E-07	1.3E-05	5.7E-06	1.0E-06	1.4E-06	2.3E-06
	-1	1.1E-03	2.7E-02	6.8E-03	3.9E-05	1.7E+00	1.7E-01	5.2E+00	5.3E-06	8.1E-05	5.2E+00	1.8E-04	8.6E-06	6.0E-06	5.9E-06	3.0E-06	9.1E-05	4.0E-05	7.2E-06	9.8E-06	1.6E-05
	0	1.5E-03	3.8E-02	9.4E-03	5.3E-05	2.3E+00	2.3E-01	7.1E+00	7.2E-06	1.1E-04	7.1E+00	2.4E-04	1.2E-05	8.2E-06	8.1E-06	4.1E-06	1.2E-04	5.4E-05	9.9E-06	1.3E-05	2.2E-05
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.6E-03	4.1E-02	1.0E-02	5.9E-05	2.5E+00	2.5E-01	7.9E+00	8.0E-06	1.2E-04	7.9E+00	2.7E-04	1.3E-05	9.0E-06	8.9E-06	4.5E-06	1.4E-04	6.0E-05	1.1E-05	1.5E-05	2.4E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	8.2E-04	2.1E-02	5.3E-03	3.0E-05	1.3E+00	1.3E-01	4.0E+00	4.1E-06	6.2E-05	4.0E+00	1.4E-04	6.6E-06	4.6E-06	4.5E-06	2.3E-06	7.0E-05	3.1E-05	5.6E-06	7.6E-06	1.2E-05
	S0.5	7.9E-04	2.0E-02	5.1E-03	2.9E-05	1.2E+00	1.2E-01	3.9E+00	3.9E-06	6.0E-05	3.9E+00	1.3E-04	6.4E-06	4.4E-06	4.4E-06	2.2E-06	6.8E-05	2.9E-05	5.4E-06	7.3E-06	1.2E-05
	W1	8.2E-04	2.1E-02	5.3E-03	3.0E-05	1.3E+00	1.3E-01	4.0E+00	4.1E-06	6.2E-05	4.0E+00	1.4E-04	6.6E-06	4.6E-06	4.5E-06	2.3E-06	7.0E-05	3.1E-05	5.6E-06	7.6E-06	1.2E-05
	S1.5	1.5E-04	3.9E-03	9.8E-04	5.6E-06	2.4E-01	2.4E-02	7.4E-01	7.5E-07	1.2E-05	7.4E-01	2.5E-05	1.2E-06	8.5E-07	8.4E-07	4.2E-07	1.3E-05	5.7E-06	1.0E-06	1.4E-06	2.3E-06
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.5E-03	6.5E-02	1.6E-02	9.2E-05	3.9E+00	4.0E-01	1.2E+01	1.2E-05	1.9E-04	1.2E+01	4.2E-04	2.0E-05	1.4E-05	1.4E-05	7.0E-06	2.2E-04	9.4E-05	1.7E-05	2.3E-05	3.8E-05
Five Mile	Monthly	3.2E-05	8.3E-04	2.1E-04	1.2E-06	5.0E-02	5.1E-03	1.6E-01	1.6E-07	2.4E-06	1.6E-01	5.4E-06	2.6E-07	1.8E-07	1.8E-07	9.0E-08	2.8E-06	1.2E-06	2.2E-07	3.0E-07	4.8E-07
	-1	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	0	3.4E-04	8.8E-03	2.2E-03	1.3E-05	5.3E-01	5.4E-02	1.7E+00	1.7E-06	2.6E-05	1.7E+00	5.7E-05	2.8E-06	1.9E-06	1.9E-06	9.5E-07	2.9E-05	1.3E-05	2.3E-06	3.2E-06	5.1E-06
	1	2.8E-04	7.3E-03	1.8E-03	1.0E-05	4.4E-01	4.5E-02	1.4E+00	1.4E-06	2.2E-05	1.4E+00	4.7E-05	2.3E-06	1.6E-06	1.6E-06	7.9E-07	2.4E-05	1.1E-05	1.9E-06	2.6E-06	4.3E-06
	2	3.4E-04	8.8E-03	2.2E-03	1.3E-05	5.3E-01	5.4E-02	1.7E+00	1.7E-06	2.6E-05	1.7E+00	5.7E-05	2.8E-06	1.9E-06	1.9E-06	9.5E-07	2.9E-05	1.3E-05	2.3E-06	3.2E-06	5.1E-06
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.2E-04	3.0E-03	7.5E-04	4.3E-06	1.8E-01	1.8E-02	5.7E-01	5.7E-07	8.8E-06	5.7E-01	1.9E-05	9.4E-07	6.5E-07	6.4E-07	3.2E-07	9.9E-06	4.3E-06	7.9E-07	1.1E-06	1.7E-06
	S0.5	1.7E-04	4.3E-03	1.1E-03	6.1E-06	2.6E-01	2.6E-02	8.2E-01	8.3E-07	1.3E-05	8.2E-01	2.8E-05	1.4E-06	9.4E-07	9.3E-07	4.7E-07	1.4E-05	6.2E-06	1.1E-06	1.5E-06	2.5E-06
	W1	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	S1.5	1.7E-04	4.3E-03	1.1E-03	6.1E-06	2.6E-01	2.6E-02	8.2E-01	8.3E-07	1.3E-05	8.2E-01	2.8E-05	1.4E-06	9.4E-07	9.3E-07	4.7E-07	1.4E-05	6.2E-06	1.1E-06	1.5E-06	2.5E-06
	W2	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	S2.5	7.8E-04	2.0E-02	5.1E-03	2.9E-05	1.2E+00	1.2E-01	3.8E+00	3.9E-06	6.0E-05	3.8E+00	1.3E-04	6.4E-06	4.4E-06	4.4E-06	2.2E-06	6.7E-05	2.9E-05	5.3E-06	7.3E-06	1.2E-05
Livengood	Monthly	2.4E-04	6.3E-03	1.6E-03	8.9E-06	3.8E-01	3.8E-02	1.2E+00	1.2E-06	1.9E-05	1.2E+00	4.1E-05	2.0E-06	1.4E-06	1.4E-06	6.8E-07	2.1E-05	9.1E-06	1.7E-06	2.3E-06	3.7E-06
	-1	2.4E-04	6.3E-03	1.6E-03	8.9E-06	3.8E-01	3.8E-02	1.2E+00	1.2E-06	1.9E-05	1.2E+00	4.1E-05	2.0E-06	1.4E-06	1.4E-06	6.8E-07	2.1E-05	9.1E-06	1.7E-06	2.3E-06	3.7E-06
	0	2.6E-03	6.7E-02	1.7E-02	9.5E-05	4.0E+00	4.1E-01	1.3E+01	1.3E-05	2.0E-04	1.3E+01	4.3E-04	2.1E-05	1.5E-05	1.4E-05	7.2E-06	2.2E-04	9.6E-05	1.8E-05	2.4E-05	3.9E-05
	1	2.1E-03	5.5E-02	1.4E-02	7.9E-05	3.4E+00	3.4E-01	1.0E+01	1.1E-05	1.6E-04	1.1E+01	3.6E-04	1.7E-05	1.2E-05	1.2E-05	6.0E-06	1.8E-04	8.0E-05	1.5E-05	2.0E-05	3.2E-05
	2	2.6E-03	6.7E-02	1.7E-02	9.5E-05	4.0E+00	4.1E-01	1.3E+01	1.3E-05	2.0E-04	1.3E+01	4.3E-04	2.1E-05	1.5E-05	1.4E-05	7.2E-06	2.2E-04	9.6E-05	1.8E-05	2.4E-05	3.9E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	1.1E-03	2.8E-02	6.9E-03	3.9E-05	1.7E+00	1.7E-01	5.2E+00	5.3E-06	8.1E-05	5.3E+00	1.8E-04	8.7E-06	6.0E-06	5.9E-06	3.0E-06	9.2E-05	4.0E-05	7.3E-06	9.9E-06	1.6E-05
	W1	1.3E-03	3.4E-02	8.5E-03	4.8E-05	2.1E+00	2.1E-01	6.4E+00	6.5E-06	1.0E-04	6.4E+00	2.2E-04	1.1E-05	7.4E-06	7.3E-06	3.7E-06	1.1E-04	4.9E-05	8.9E-06	1.2E-05	2.0E-05
	S1.5	1.3E-03	3.3E-02	8.2E-03	4.7E-05	2.0E+00	2.0E-01	6.2E+00	6.3E-06	9.6E-05	6.2E+00	2.1E-04	1.0E-05	7.1E-06	7.0E-06	3.5E-06	1.1E-04	4.7E-05	8.6E-06	1.2E-05	1.9E-05
	W2	1.3E-03	3.4E-02	8.5E-03	4.8E-05	2.1E+00	2.1E-01	6.4E+00	6.5E-06	1.0E-04	6.4E+00	2.2E-04	1.1E-05	7.4E-06	7.3E-06	3.7E-06	1.1E-04	4.9E-05	8.9E-06	1.2E-05	2.0E-05
	S2.5	4.9E-03	1.3E-01	3.2E-02	1.8E-04	7.7E+00	7.8E-01	2.4E+01	2.4E-05	3.7E-04	2.4E+01	8.2E-04	4.0E-05	2.8E-05	2.7E-05	1.4E-05	4.2E-04	1.8E-04	3.3E-05	4.6E-05	7.4E-05
Dunbar	Monthly	2.3E-04	6.0E-03	1.5E-03	8.5E-06	3.6E-01	3.6E-02	1.1E+00	1.1E-06	1.7E-05	1.1E+00	3.8E-05	1.9E-06	1.3E-06	1.3E-06	6.4E-07	2.0E-05	8.6E-06	1.6E-06	2.1E-06	3.4E-06
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	1.2E-03	3.2E-02	8.0E-03	4.6E-05	1.9E+00	2.0E-01	6.1E+00	6.1E-06	9.4E-05	6.1E+00	2.1E-04	1.0E-05	7.0E-06	6.9E-06	3.5E-06	1.1E-04	4.6E-05	8.4E-06	1.1E-05	1.9E-05
	1	6.0E-04	1.6E-02	3.9E-03	2.2E-05	9.4E-01	9.4E-02	2.9E+00	3.0E-06	4.5E-05	2.9E+00	1.0E-04	4.8E-06	3.4E-06	3.3E-06	1.7E-06	5.1E-05	2.2E-05	4.1E-06	5.5E-06	9.0E-06
	2	1.8E-03	4.8E-02	1.2E-02	6.8E-05	2.9E+00	2.9E-01	9.0E+00	9.1E-06	1.4E-04	9.0E+00	3.1E-04	1.5E-05	1.0E-05	1.0E-05	5.1E-06	1.6E-04	6.9E-05	1.2E-05	1.7E-05	2.8E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	8.3E-04	2.1E-02	5.3E-03	3.0E-05	1.3E+00	1.3E-01	4.1E+00	4.1E-06	6.3E-05	4.1E+00	1.4E-04	6.7E-06	4.7E-06	4.6E-06	2.3E-06	7.1E-05	3.1E-05	5.6E-06	7.7E-06	1.2E-05
	S1.5	1.0E-03	2.6E-02	6.5E-03	3.7E-05	1.6E+00	1.6E-01	5.0E+00	5.0E-06	7.7E-05	5.0E+00	1.7E-04	8.2E-06	5.7E-06	5.6E-06	2.8E-06	8.7E-05	3.8E-05	6.9E-06	9.4E-06	1.5E-05
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.8E-03	4.8E-02	1.2E-02	6.8E-05	2.9E+00	2.9E-01	9.0E+00	9.1E-06	1.4E-04	9.0E+00	3.1E-04	1.5E-05	1.0E-05	1.0E-05	5.1E-06	1.6E-04	6.9E-05	1.2E-05	1.7E-05	2.8E-05
Healy	Monthly	1.3E-04	3.5E-03	8.6E-04	4.9E-06	2.1E-01	2.1E-02	6.5E-01	6.6E-07	1.0E-05	6.5E-01	2.2E-05	1.1E-06	7.5E-07	7.4E-07	3.7E-07	1.1E-05	5.0E-06	9.1E-07	1.2E-06	2.0E-06
	-1	9.3E-04	2.4E-02	6.0E-03	3.4E-05	1.5E+00	1.5E-01	4.5E+00	4.6E-06	7.1E-05	4.5E+00	1.6E-04	7.6E-06	5.2E-06	5.2E-06	2.6E-06	8.0E-05	3.5E-05	6.3E-06	8.6E-06	1.4E-05
	0	1.3E-03	3.3E-02	8.3E-03	4.7E-05	2.0E+00	2.0E-01	6.2E+00	6.3E-06	9.7E-05	6.2E+00	2.1E-04	1.0E-05	7.2E-06	7.1E-06	3.6E-06	1.1E-04	4.8E-05	8.7E-06	1.2E-05	1.9E-05
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.4E-03	3.7E-02	9.1E-03	5.2E-05	2.2E+00	2.2E-01	6.9E+00	7.0E-06	1.1E-04	6.9E+00	2.4E-04	1.1E-05	7.9E-06	7.8E-06	4.0E-06	1.2E-04	5.3E-05	9.6E-06	1.3E-05	2.1E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	7.2E-04	1.9E-02	4.6E-03	2.6E-05	1.1E+00	1.1E-01	3.5E+00	3.6E-06	5.5E-05	3.5E+00	1.2E-04	5.8E-06	4.0E-06	4.0E-06	2.0E-06	6.2E-05	2.7E-05	4.9E-06	6.7E-06	1.1E-05
	S0.5	6.9E-04	1.8E-02	4.5E-03	2.5E-05	1.1E+00	1.1E-01	3.4E+00	3.4E-06	5.3E-05	3.4E+00	1.2E-04	5.6E-06	3.9E-06	3.8E-06	1.9E-06	5.9E-05	2.6E-05	4.7E-06	6.4E-06	1.0E-05
	W1	7.2E-04	1.9E-02	4.6E-03	2.6E-05	1.1E+00	1.1E-01	3.5E+00	3.6E-06	5.5E-05	3.5E+00	1.2E-04	5.8E-06	4.0E-06	4.0E-06	2.0E-06	6.2E-05	2.7E-05	4.9E-06	6.7E-06	1.1E-05
	S1.5	1.3E-04	3.5E-03	8.6E-04	4.9E-06	2.1E-01	2.1E-02	6.5E-01	6.6E-07	1.0E-05	6.5E-01	2.2E-05	1.1E-06	7.5E-07	7.4E-07	3.7E-07	1.1E-05	5.0E-06	9.1E-07	1.2E-06	2.0E-06
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.2E-03	5.8E-02	1.4E-02	8.1E-05	3.5E+00	3.5E-01	1.1E+01	1.1E-05	1.7E-04	1.1E+01	3.7E-04	1.8E-05	1.2E-05	1.2E-05	6.2E-06	1.9E-04	8.3E-05	1.5E-05	2.0E-05	3.3E-05

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Refuse Truck Trip Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																			
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Cantwell	Monthly	3.2E-05	8.4E-04	2.1E-04	1.2E-06	5.0E-02	5.1E-03	1.6E-01	1.6E-07	2.4E-06	1.6E-01	5.4E-06	2.6E-07	1.8E-07	1.8E-07	9.0E-08	2.8E-06	1.2E-06	2.2E-07	3.0E-07	4.8E-07
	-1	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	0	3.4E-04	8.9E-03	2.2E-03	1.2E-05	5.3E-01	5.4E-02	1.7E+00	1.7E-06	2.6E-05	1.7E+00	5.7E-05	2.8E-06	1.9E-06	1.9E-06	9.5E-07	2.9E-05	1.3E-05	2.3E-06	3.2E-06	5.1E-06
	1	2.8E-04	7.4E-03	1.8E-03	1.0E-05	4.4E-01	4.5E-02	1.4E+00	1.4E-06	2.2E-05	1.4E+00	4.7E-05	2.3E-06	1.6E-06	1.6E-06	7.9E-07	2.4E-05	1.1E-05	1.9E-06	2.6E-06	4.3E-06
	2	3.4E-04	8.9E-03	2.2E-03	1.2E-05	5.3E-01	5.4E-02	1.7E+00	1.7E-06	2.6E-05	1.7E+00	5.7E-05	2.8E-06	1.9E-06	1.9E-06	9.5E-07	2.9E-05	1.3E-05	2.3E-06	3.2E-06	5.1E-06
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.2E-04	3.0E-03	7.5E-04	4.2E-06	1.8E-01	1.8E-02	5.6E-01	5.7E-07	8.8E-06	5.6E-01	1.9E-05	9.4E-07	6.5E-07	6.4E-07	3.2E-07	9.9E-06	4.3E-06	7.9E-07	1.1E-06	1.7E-06
	S0.5	1.7E-04	4.4E-03	1.1E-03	6.1E-06	2.6E-01	2.6E-02	8.2E-01	8.3E-07	1.3E-05	8.2E-01	2.8E-05	1.4E-06	9.4E-07	9.3E-07	4.7E-07	1.4E-05	6.2E-06	1.1E-06	1.5E-06	2.5E-06
	W1	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	S1.5	1.7E-04	4.4E-03	1.1E-03	6.1E-06	2.6E-01	2.6E-02	8.2E-01	8.3E-07	1.3E-05	8.2E-01	2.8E-05	1.4E-06	9.4E-07	9.3E-07	4.7E-07	1.4E-05	6.2E-06	1.1E-06	1.5E-06	2.5E-06
	W2	1.7E-04	4.5E-03	1.1E-03	6.4E-06	2.7E-01	2.7E-02	8.5E-01	8.6E-07	1.3E-05	8.5E-01	2.9E-05	1.4E-06	9.8E-07	9.6E-07	4.9E-07	1.5E-05	6.5E-06	1.2E-06	1.6E-06	2.6E-06
	S2.5	7.8E-04	2.0E-02	5.1E-03	2.9E-05	1.2E+00	1.2E-01	3.8E+00	3.9E-06	6.0E-05	3.8E+00	1.3E-04	6.4E-06	4.4E-06	4.4E-06	2.2E-06	6.7E-05	2.9E-05	5.3E-06	7.3E-06	1.2E-05
Swan Lake	Monthly	4.0E-04	1.0E-02	2.6E-03	1.4E-05	6.2E-01	6.3E-02	1.9E+00	2.0E-06	3.0E-05	1.9E+00	6.6E-05	3.2E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-05	1.5E-05	2.7E-06	3.7E-06	6.0E-06
	-1	1.7E-03	4.5E-02	1.1E-02	6.4E-05	2.7E+00	2.8E-01	8.5E+00	8.7E-06	1.3E-04	8.5E+00	2.9E-04	1.4E-05	9.8E-06	9.7E-06	4.9E-06	1.5E-04	6.5E-05	1.2E-05	1.6E-05	2.6E-05
	0	3.8E-03	9.9E-02	2.5E-02	1.4E-04	6.0E+00	6.0E-01	1.8E+01	1.9E-05	2.9E-04	1.8E+01	6.4E-04	3.1E-05	2.1E-05	2.1E-05	1.1E-05	3.3E-04	1.4E-04	2.6E-05	3.5E-05	5.7E-05
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	4.2E-03	1.1E-01	2.7E-02	1.5E-04	6.6E+00	6.6E-01	2.0E+01	2.1E-05	3.2E-04	2.0E+01	7.0E-04	3.4E-05	2.4E-05	2.3E-05	1.2E-05	3.6E-04	1.6E-04	2.9E-05	3.9E-05	6.3E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.1E-03	2.9E-02	7.2E-03	4.0E-05	1.7E+00	1.8E-01	5.4E+00	5.5E-06	8.4E-05	5.4E+00	1.9E-04	9.0E-06	6.3E-06	6.2E-06	3.1E-06	9.5E-05	4.2E-05	7.6E-06	1.0E-05	1.7E-05
	S0.5	2.1E-03	5.3E-02	1.3E-02	7.5E-05	3.2E+00	3.3E-01	1.0E+01	1.0E-05	1.6E-04	1.0E+01	3.4E-04	1.7E-05	1.2E-05	1.1E-05	5.8E-06	1.8E-04	7.7E-05	1.4E-05	1.9E-05	3.1E-05
	W1	2.1E-03	5.5E-02	1.4E-02	7.8E-05	3.4E+00	3.4E-01	1.0E+01	1.1E-05	1.6E-04	1.0E+01	3.6E-04	1.7E-05	1.2E-05	1.2E-05	6.0E-06	1.8E-04	8.0E-05	1.5E-05	2.0E-05	3.2E-05
	S1.5	4.0E-04	1.0E-02	2.6E-03	1.4E-05	6.2E-01	6.3E-02	1.9E+00	2.0E-06	3.0E-05	1.9E+00	6.6E-05	3.2E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-05	1.5E-05	2.7E-06	3.7E-06	6.0E-06
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	5.6E-03	1.4E-01	3.6E-02	2.0E-04	8.7E+00	8.8E-01	2.7E+01	2.8E-05	4.2E-04	2.7E+01	9.3E-04	4.5E-05	3.1E-05	3.1E-05	1.6E-05	4.8E-04	2.1E-04	3.8E-05	5.1E-05	8.3E-05
Rustic Wilderness	Monthly	2.7E-04	6.9E-03	1.7E-03	9.8E-06	4.2E-01	4.2E-02	1.3E+00	1.3E-06	2.0E-05	1.3E+00	4.5E-05	2.2E-06	1.5E-06	1.5E-06	7.5E-07	2.3E-05	1.0E-05	1.8E-06	2.5E-06	4.0E-06
	-1	1.7E-03	4.3E-02	1.1E-02	6.1E-05	2.6E+00	2.6E-01	8.1E+00	8.2E-06	1.3E-04	8.1E+00	2.8E-04	1.3E-05	9.4E-06	9.2E-06	4.7E-06	1.4E-04	6.2E-05	1.1E-05	1.5E-05	2.5E-05
	0	2.8E-03	7.4E-02	1.8E-02	1.0E-04	4.5E+00	4.5E-01	1.4E+01	1.4E-05	2.2E-04	1.4E+01	4.7E-04	2.3E-05	1.6E-05	1.6E-05	8.0E-06	2.4E-04	1.1E-04	1.9E-05	2.6E-05	4.3E-05
	1	1.7E-03	4.3E-02	1.1E-02	6.1E-05	2.6E+00	2.6E-01	8.1E+00	8.2E-06	1.3E-04	8.1E+00	2.8E-04	1.3E-05	9.4E-06	9.2E-06	4.7E-06	1.4E-04	6.2E-05	1.1E-05	1.5E-05	2.5E-05
	2	2.8E-03	7.4E-02	1.8E-02	1.0E-04	4.5E+00	4.5E-01	1.4E+01	1.4E-05	2.2E-04	1.4E+01	4.7E-04	2.3E-05	1.6E-05	1.6E-05	8.0E-06	2.4E-04	1.1E-04	1.9E-05	2.6E-05	4.3E-05
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.2E-03	3.1E-02	7.6E-03	4.3E-05	1.9E+00	1.9E-01	5.7E+00	5.9E-06	9.0E-05	5.7E+00	2.0E-04	9.6E-06	6.6E-06	6.6E-06	3.3E-06	1.0E-04	4.4E-05	8.0E-06	1.1E-05	1.8E-05
	S0.5	1.4E-03	3.6E-02	9.0E-03	5.1E-05	2.2E+00	2.2E-01	6.8E+00	6.9E-06	1.1E-04	6.8E+00	2.3E-04	1.1E-05	7.9E-06	7.7E-06	3.9E-06	1.2E-04	5.2E-05	9.5E-06	1.3E-05	2.1E-05
	W1	1.4E-03	3.8E-02	9.4E-03	5.3E-05	2.3E+00	2.3E-01	7.0E+00	7.2E-06	1.1E-04	7.0E+00	2.4E-04	1.2E-05	8.2E-06	8.0E-06	4.1E-06	1.2E-04	5.4E-05	9.9E-06	1.3E-05	2.2E-05
	S1.5	1.4E-03	3.6E-02	9.0E-03	5.1E-05	2.2E+00	2.2E-01	6.8E+00	6.9E-06	1.1E-04	6.8E+00	2.3E-04	1.1E-05	7.9E-06	7.7E-06	3.9E-06	1.2E-04	5.2E-05	9.5E-06	1.3E-05	2.1E-05
	W2	7.5E-04	1.9E-02	4.8E-03	2.7E-05	1.2E+00	1.2E-01	3.6E+00	3.7E-06	5.7E-05	3.6E+00	1.3E-04	6.1E-06	4.2E-06	4.2E-06	2.1E-06	6.4E-05	2.8E-05	5.1E-06	7.0E-06	1.1E-05
	S2.5	6.1E-03	1.6E-01	3.9E-02	2.2E-04	9.6E+00	9.7E-01	3.0E+01	3.0E-05	4.6E-04	3.0E+01	1.0E-03	5.0E-05	3.4E-05	3.4E-05	1.7E-05	5.2E-04	2.3E-04	4.2E-05	5.7E-05	9.2E-05

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Speciated Supply Truck Trip Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Prudhoe Bay	Monthly	4.2E-03	1.1E-01	2.7E-02	1.5E-04	6.3E+00	6.4E-01	2.0E+01	2.1E-05	3.2E-04	2.0E+01	7.0E-04	3.4E-05	2.4E-05	2.3E-05	1.2E-05	3.6E-04	1.6E-04	2.9E-05	3.9E-05	6.3E-05
	-1	3.7E-02	9.7E-01	2.4E-01	1.3E-03	5.6E+01	5.6E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.2E-03	3.0E-04	2.1E-04	2.1E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.6E-04
	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	3.7E-02	9.7E-01	2.4E-01	1.3E-03	5.6E+01	5.6E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.2E-03	3.0E-04	2.1E-04	2.1E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.6E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	7.6E-03	2.0E-01	4.9E-02	2.8E-04	1.1E+01	1.1E+00	3.7E+01	3.8E-05	5.8E-04	3.7E+01	1.3E-03	6.1E-05	4.3E-05	4.2E-05	2.1E-05	6.5E-04	2.8E-04	5.1E-05	7.0E-05	1.1E-04
	W0	2.3E-02	6.0E-01	1.5E-01	8.3E-04	3.4E+01	3.4E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.8E-03	1.8E-04	1.3E-04	1.3E-04	6.4E-05	1.9E-03	8.5E-04	1.5E-04	2.1E-04	3.4E-04
	S0.5	7.6E-03	2.0E-01	4.9E-02	2.8E-04	1.1E+01	1.1E+00	3.7E+01	3.8E-05	5.8E-04	3.7E+01	1.3E-03	6.1E-05	4.3E-05	4.2E-05	2.1E-05	6.5E-04	2.8E-04	5.1E-05	7.0E-05	1.1E-04
	W1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	3.7E-02	9.7E-01	2.4E-01	1.3E-03	5.6E+01	5.6E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.2E-03	3.0E-04	2.1E-04	2.1E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.6E-04
Franklin Bluffs	Monthly	3.8E-03	1.0E-01	2.5E-02	1.4E-04	5.8E+00	5.8E-01	1.9E+01	1.9E-05	2.9E-04	1.9E+01	6.4E-04	3.1E-05	2.2E-05	2.1E-05	1.1E-05	3.3E-04	1.4E-04	2.6E-05	3.5E-05	5.8E-05
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	2.1E-02	5.4E-01	1.3E-01	7.5E-04	3.1E+01	3.1E+00	1.0E+02	1.0E-04	1.6E-03	1.0E+02	3.5E-03	1.7E-04	1.2E-04	1.1E-04	5.8E-05	1.8E-03	7.7E-04	1.4E-04	1.9E-04	3.1E-04
	1	2.4E-02	6.2E-01	1.5E-01	8.6E-04	3.6E+01	3.6E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	4.0E-03	1.9E-04	1.3E-04	1.3E-04	6.7E-05	2.0E-03	8.9E-04	1.6E-04	2.2E-04	3.6E-04
	2	4.1E-02	1.1E+00	2.6E-01	1.5E-03	6.1E+01	6.2E+00	2.0E+02	2.0E-04	3.1E-03	2.0E+02	6.8E-03	3.3E-04	2.3E-04	2.3E-04	1.1E-04	3.5E-03	1.5E-03	2.8E-04	3.8E-04	6.1E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	1.4E-02	3.6E-01	8.9E-02	5.0E-04	2.1E+01	2.1E+00	6.7E+01	6.8E-05	1.0E-03	6.7E+01	2.3E-03	1.1E-04	7.8E-05	7.7E-05	3.9E-05	1.2E-03	5.2E-04	9.4E-05	1.3E-04	2.1E-04
	S1.5	2.0E-02	5.2E-01	1.3E-01	7.2E-04	3.0E+01	3.0E+00	9.7E+01	9.9E-05	1.5E-03	9.7E+01	3.3E-03	1.6E-04	1.1E-04	1.1E-04	5.6E-05	1.7E-03	7.4E-04	1.4E-04	1.8E-04	3.0E-04
	W2	1.1E-02	2.8E-01	6.9E-02	3.9E-04	1.6E+01	1.6E+00	5.2E+01	5.3E-05	8.2E-04	5.2E+01	1.8E-03	8.7E-05	6.0E-05	6.0E-05	3.0E-05	9.2E-04	4.0E-04	7.3E-05	9.9E-05	1.6E-04
	S2.5	4.4E-02	1.1E+00	2.8E-01	1.6E-03	6.6E+01	6.6E+00	2.1E+02	2.2E-04	3.3E-03	2.1E+02	7.3E-03	3.5E-04	2.5E-04	2.4E-04	1.2E-04	3.7E-03	1.6E-03	3.0E-04	4.0E-04	6.6E-04
Happy Valley	Monthly	3.4E-03	9.0E-02	2.2E-02	1.2E-04	5.2E+00	5.2E-01	1.7E+01	1.7E-05	2.6E-04	1.7E+01	5.7E-04	2.8E-05	1.9E-05	1.9E-05	9.6E-06	2.9E-04	1.3E-04	2.3E-05	3.2E-05	5.2E-05
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	2.7E-02	7.2E-01	1.8E-01	1.0E-03	4.1E+01	4.2E+00	1.3E+02	1.4E-04	2.1E-03	1.3E+02	4.6E-03	2.2E-04	1.5E-04	1.5E-04	7.7E-05	2.4E-03	1.0E-03	1.9E-04	2.5E-04	4.1E-04
	1	3.0E-02	7.9E-01	2.0E-01	1.1E-03	4.5E+01	4.6E+00	1.5E+02	1.5E-04	2.3E-03	1.5E+02	5.0E-03	2.5E-04	1.7E-04	1.7E-04	8.5E-05	2.6E-03	1.1E-03	2.1E-04	2.8E-04	4.5E-04
	2	3.6E-02	9.6E-01	2.4E-01	1.3E-03	5.5E+01	5.5E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.1E-03	3.0E-04	2.0E-04	2.0E-04	1.0E-04	3.1E-03	1.4E-03	2.5E-04	3.4E-04	5.5E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	3.4E-03	9.0E-02	2.2E-02	1.2E-04	5.2E+00	5.2E-01	1.7E+01	1.7E-05	2.6E-04	1.7E+01	5.7E-04	2.8E-05	1.9E-05	1.9E-05	9.6E-06	2.9E-04	1.3E-04	2.3E-05	3.2E-05	5.2E-05
	W1	1.9E-02	4.9E-01	1.2E-01	6.7E-04	2.8E+01	2.8E+00	9.0E+01	9.2E-05	1.4E-03	9.0E+01	3.1E-03	1.5E-04	1.0E-04	1.0E-04	5.2E-05	1.6E-03	6.9E-04	1.3E-04	1.7E-04	2.8E-04
	S1.5	1.8E-02	4.7E-01	1.2E-01	6.5E-04	2.7E+01	2.7E+00	8.7E+01	8.9E-05	1.4E-03	8.7E+01	3.0E-03	1.4E-04	1.0E-04	9.9E-05	5.0E-05	1.5E-03	6.7E-04	1.2E-04	1.7E-04	2.7E-04
	W2	1.9E-02	4.9E-01	1.2E-01	6.7E-04	2.8E+01	2.8E+00	9.0E+01	9.2E-05	1.4E-03	9.0E+01	3.1E-03	1.5E-04	1.0E-04	1.0E-04	5.2E-05	1.6E-03	6.9E-04	1.3E-04	1.7E-04	2.8E-04
	S2.5	5.7E-02	1.5E+00	3.7E-01	2.1E-03	8.6E+01	8.6E+00	2.8E+02	2.8E-04	4.3E-03	2.8E+02	9.5E-03	4.6E-04	3.2E-04	3.2E-04	1.6E-04	4.9E-03	2.1E-03	3.9E-04	5.3E-04	8.6E-04
Galbraith Lake	Monthly	2.9E-03	7.6E-02	1.9E-02	1.1E-04	4.3E+00	4.4E-01	1.4E+01	1.4E-05	2.2E-04	1.4E+01	4.8E-04	2.3E-05	1.6E-05	1.6E-05	8.1E-06	2.5E-04	1.1E-04	2.0E-05	2.7E-05	4.3E-05
	-1	2.5E-02	6.7E-01	1.6E-01	9.3E-04	3.8E+01	3.9E+00	1.2E+02	1.3E-04	1.9E-03	1.2E+02	4.3E-03	2.1E-04	1.4E-04	1.4E-04	7.1E-05	2.2E-03	9.5E-04	1.7E-04	2.4E-04	3.8E-04
	0	2.5E-02	6.7E-01	1.6E-01	9.3E-04	3.8E+01	3.9E+00	1.2E+02	1.3E-04	1.9E-03	1.2E+02	4.3E-03	2.1E-04	1.4E-04	1.4E-04	7.1E-05	2.2E-03	9.5E-04	1.7E-04	2.4E-04	3.8E-04
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	3.1E-02	8.1E-01	2.0E-01	1.1E-03	4.6E+01	4.6E+00	1.5E+02	1.5E-04	2.3E-03	1.5E+02	5.1E-03	2.5E-04	1.7E-04	1.7E-04	8.6E-05	2.6E-03	1.1E-03	2.1E-04	2.8E-04	4.6E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	5.2E-03	1.4E-01	3.4E-02	1.9E-04	7.8E+00	7.9E-01	2.5E+01	2.6E-05	4.0E-04	2.5E+01	8.7E-04	4.2E-05	2.9E-05	2.9E-05	1.5E-05	4.5E-04	1.9E-04	3.5E-05	4.8E-05	7.8E-05
	W0	1.6E-02	4.1E-01	1.0E-01	5.7E-04	2.3E+01	2.4E+00	7.6E+01	7.7E-05	1.2E-03	7.6E+01	2.6E-03	1.3E-04	8.8E-05	8.7E-05	4.4E-05	1.3E-03	5.8E-04	1.1E-04	1.4E-04	2.3E-04
	S0.5	1.5E-02	4.0E-01	9.7E-02	5.5E-04	2.3E+01	2.3E+00	7.3E+01	7.5E-05	1.1E-03	7.3E+01	2.5E-03	1.2E-04	8.5E-05	8.4E-05	4.2E-05	1.3E-03	5.6E-04	1.0E-04	1.4E-04	2.3E-04
	W1	1.6E-02	4.1E-01	1.0E-01	5.7E-04	2.3E+01	2.4E+00	7.6E+01	7.7E-05	1.2E-03	7.6E+01	2.6E-03	1.3E-04	8.8E-05	8.7E-05	4.4E-05	1.3E-03	5.8E-04	1.1E-04	1.4E-04	2.3E-04
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	5.1E-02	1.3E+00	3.3E-01	1.9E-03	7.7E+01	7.7E+00	2.5E+02	2.5E-04	3.9E-03	2.5E+02	8.5E-03	4.1E-04	2.9E-04	2.8E-04	1.4E-04	4.4E-03	1.9E-03	3.5E-04	4.7E-04	7.7E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Supply Truck Trip Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Dietrich	Monthly	2.3E-03	6.0E-02	1.5E-02	8.5E-05	3.5E+00	3.5E-01	1.1E+01	1.1E-05	1.8E-04	1.1E+01	3.9E-04	1.9E-05	1.3E-05	1.3E-05	6.5E-06	2.0E-04	8.6E-05	1.6E-05	2.1E-05	3.5E-05
	-1	2.0E-02	5.3E-01	1.3E-01	7.5E-04	3.1E+01	3.1E+00	1.0E+02	1.0E-04	1.5E-03	1.0E+02	3.4E-03	1.7E-04	1.1E-04	1.1E-04	5.7E-05	1.7E-03	7.6E-04	1.4E-04	1.9E-04	3.1E-04
	0	1.6E-02	4.2E-01	1.0E-01	6.0E-04	2.4E+01	2.5E+00	7.9E+01	8.0E-05	1.2E-03	7.9E+01	2.7E-03	1.3E-04	9.1E-05	9.0E-05	4.5E-05	1.4E-03	6.1E-04	1.1E-04	1.5E-04	2.4E-04
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	2.5E-02	6.3E-01	1.6E-01	9.0E-04	3.7E+01	3.7E+00	1.2E+02	1.2E-04	1.9E-03	1.2E+02	4.1E-03	2.0E-04	1.4E-04	1.4E-04	6.9E-05	2.1E-03	9.2E-04	1.7E-04	2.3E-04	3.7E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	4.2E-03	1.1E-01	2.7E-02	1.5E-04	6.3E+00	6.3E-01	2.0E+01	2.1E-05	3.2E-04	2.0E+01	7.0E-04	3.4E-05	2.3E-05	2.3E-05	1.2E-05	3.6E-04	1.6E-04	2.8E-05	3.9E-05	6.3E-05
	W0	1.2E-02	3.2E-01	8.1E-02	4.6E-04	1.9E+01	1.9E+00	6.1E+01	6.2E-05	9.5E-04	6.1E+01	2.1E-03	1.0E-04	7.0E-05	6.9E-05	3.5E-05	1.1E-03	4.7E-04	8.5E-05	1.2E-04	1.9E-04
	S0.5	1.2E-02	3.1E-01	7.8E-02	4.4E-04	1.8E+01	1.8E+00	5.9E+01	6.0E-05	9.2E-04	5.9E+01	2.0E-03	9.8E-05	6.8E-05	6.7E-05	3.4E-05	1.0E-03	4.5E-04	8.2E-05	1.1E-04	1.8E-04
	W1	8.3E-03	2.2E-01	5.4E-02	3.1E-04	1.3E+01	1.3E+00	4.1E+01	4.1E-05	6.3E-04	4.1E+01	1.4E-03	6.8E-05	4.7E-05	4.6E-05	2.3E-05	7.1E-04	3.1E-04	5.7E-05	7.7E-05	1.3E-04
	S1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	3.7E-02	9.4E-01	2.4E-01	1.3E-03	5.5E+01	5.5E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.1E-03	3.0E-04	2.1E-04	2.0E-04	1.0E-04	3.1E-03	1.4E-03	2.5E-04	3.4E-04	5.5E-04
Prospect	Monthly	1.3E-03	3.4E-02	8.4E-03	4.8E-05	2.0E+00	2.0E-01	6.4E+00	6.5E-06	9.9E-05	6.4E+00	2.2E-04	1.1E-05	7.3E-06	7.2E-06	3.7E-06	1.1E-04	4.9E-05	8.9E-06	1.2E-05	2.0E-05
	-1	9.1E-03	2.4E-01	5.9E-02	3.4E-04	1.4E+01	1.4E+00	4.5E+01	4.5E-05	6.9E-04	4.5E+01	1.5E-03	7.4E-05	5.1E-05	5.1E-05	2.6E-05	7.8E-04	3.4E-04	6.2E-05	8.5E-05	1.4E-04
	0	1.3E-02	3.2E-01	8.1E-02	4.6E-04	1.9E+01	1.9E+00	6.1E+01	6.2E-05	9.5E-04	6.1E+01	2.1E-03	1.0E-04	7.0E-05	7.0E-05	3.5E-05	1.1E-03	4.7E-04	8.5E-05	1.2E-04	1.9E-04
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.4E-02	3.6E-01	8.9E-02	5.1E-04	2.1E+01	2.1E+00	6.8E+01	6.9E-05	1.1E-03	6.8E+01	2.3E-03	1.1E-04	7.8E-05	7.7E-05	3.9E-05	1.2E-03	5.2E-04	9.4E-05	1.3E-04	2.1E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	7.0E-03	1.8E-01	4.5E-02	2.6E-04	1.1E+01	1.1E+00	3.5E+01	3.5E-05	5.4E-04	3.5E+01	1.2E-03	5.7E-05	4.0E-05	3.9E-05	2.0E-05	6.0E-04	2.6E-04	4.8E-05	6.5E-05	1.1E-04
	S0.5	6.8E-03	1.8E-01	4.4E-02	2.5E-04	1.0E+01	1.0E+00	3.3E+01	3.4E-05	5.2E-04	3.3E+01	1.1E-03	5.5E-05	3.8E-05	3.8E-05	1.9E-05	5.8E-04	2.5E-04	4.6E-05	6.3E-05	1.0E-04
	W1	7.0E-03	1.8E-01	4.5E-02	2.6E-04	1.1E+01	1.1E+00	3.5E+01	3.5E-05	5.4E-04	3.5E+01	1.2E-03	5.7E-05	4.0E-05	3.9E-05	2.0E-05	6.0E-04	2.6E-04	4.8E-05	6.5E-05	1.1E-04
	S1.5	1.3E-03	3.4E-02	8.4E-03	4.8E-05	2.0E+00	2.0E-01	6.4E+00	6.5E-06	9.9E-05	6.4E+00	2.2E-04	1.1E-05	7.3E-06	7.2E-06	3.7E-06	1.1E-04	4.9E-05	8.9E-06	1.2E-05	2.0E-05
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.2E-02	5.6E-01	1.4E-01	8.0E-04	3.3E+01	3.3E+00	1.1E+02	1.1E-04	1.6E-03	1.1E+02	3.6E-03	1.8E-04	1.2E-04	1.2E-04	6.1E-05	1.9E-03	8.1E-04	1.5E-04	2.0E-04	3.3E-04
Five Mile	Monthly	9.4E-04	2.4E-02	6.0E-03	3.4E-05	1.4E+00	1.4E-01	4.6E+00	4.6E-06	7.1E-05	4.6E+00	1.6E-04	7.6E-06	5.3E-06	5.2E-06	2.6E-06	8.0E-05	3.5E-05	6.4E-06	8.7E-06	1.4E-05
	-1	5.1E-03	1.3E-01	3.3E-02	1.9E-04	7.6E+00	7.7E-01	2.5E+01	2.5E-05	3.8E-04	2.5E+01	8.4E-04	4.1E-05	2.8E-05	2.8E-05	1.4E-05	4.3E-04	1.9E-04	3.4E-05	4.7E-05	7.6E-05
	0	9.9E-03	2.6E-01	6.4E-02	3.7E-04	1.5E+01	1.5E+00	4.9E+01	4.9E-05	7.6E-04	4.9E+01	1.7E-03	8.0E-05	5.6E-05	5.5E-05	2.8E-05	8.5E-04	3.7E-04	6.8E-05	9.2E-05	1.5E-04
	1	8.2E-03	2.1E-01	5.3E-02	3.0E-04	1.2E+01	1.2E+00	4.0E+01	4.1E-05	6.3E-04	4.0E+01	1.4E-03	6.7E-05	4.6E-05	4.6E-05	2.3E-05	7.1E-04	3.1E-04	5.6E-05	7.6E-05	1.2E-04
	2	9.9E-03	2.6E-01	6.4E-02	3.7E-04	1.5E+01	1.5E+00	4.9E+01	4.9E-05	7.6E-04	4.9E+01	1.7E-03	8.0E-05	5.6E-05	5.5E-05	2.8E-05	8.5E-04	3.7E-04	6.8E-05	9.2E-05	1.5E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	3.4E-03	8.7E-02	2.2E-02	1.2E-04	5.1E+00	5.1E-01	1.7E+01	1.7E-05	2.6E-04	1.7E+01	5.6E-04	2.7E-05	1.9E-05	1.9E-05	9.4E-06	2.9E-04	1.3E-04	2.3E-05	3.1E-05	5.1E-05
	S0.5	4.9E-03	1.3E-01	3.1E-02	1.8E-04	7.3E+00	7.4E-01	2.4E+01	2.4E-05	3.7E-04	2.4E+01	8.1E-04	3.9E-05	2.7E-05	2.7E-05	1.4E-05	4.2E-04	1.8E-04	3.3E-05	4.5E-05	7.3E-05
	W1	5.1E-03	1.3E-01	3.3E-02	1.9E-04	7.6E+00	7.7E-01	2.5E+01	2.5E-05	3.8E-04	2.5E+01	8.4E-04	4.1E-05	2.8E-05	2.8E-05	1.4E-05	4.3E-04	1.9E-04	3.4E-05	4.7E-05	7.6E-05
	S1.5	4.9E-03	1.3E-01	3.1E-02	1.8E-04	7.3E+00	7.4E-01	2.4E+01	2.4E-05	3.7E-04	2.4E+01	8.1E-04	3.9E-05	2.7E-05	2.7E-05	1.4E-05	4.2E-04	1.8E-04	3.3E-05	4.5E-05	7.3E-05
	W2	5.1E-03	1.3E-01	3.3E-02	1.9E-04	7.6E+00	7.7E-01	2.5E+01	2.5E-05	3.8E-04	2.5E+01	8.4E-04	4.1E-05	2.8E-05	2.8E-05	1.4E-05	4.3E-04	1.9E-04	3.4E-05	4.7E-05	7.6E-05
	S2.5	2.3E-02	5.9E-01	1.5E-01	8.4E-04	3.4E+01	3.5E+00	1.1E+02	1.1E-04	1.7E-03	1.1E+02	3.8E-03	1.9E-04	1.3E-04	1.3E-04	6.4E-05	2.0E-03	8.5E-04	1.6E-04	2.1E-04	3.4E-04
Livengood	Monthly	6.5E-04	1.7E-02	4.2E-03	2.4E-05	9.8E-01	9.9E-02	3.2E+00	3.2E-06	5.0E-05	3.2E+00	1.1E-04	5.3E-06	3.7E-06	3.6E-06	1.8E-06	5.6E-05	2.4E-05	4.4E-06	6.0E-06	9.8E-06
	-1	6.5E-04	1.7E-02	4.2E-03	2.4E-05	9.8E-01	9.9E-02	3.2E+00	3.2E-06	5.0E-05	3.2E+00	1.1E-04	5.3E-06	3.7E-06	3.6E-06	1.8E-06	5.6E-05	2.4E-05	4.4E-06	6.0E-06	9.8E-06
	0	6.9E-03	1.8E-01	4.5E-02	2.5E-04	1.0E+01	1.0E+00	3.4E+01	3.4E-05	5.3E-04	3.4E+01	1.2E-03	5.6E-05	3.9E-05	3.8E-05	1.9E-05	5.9E-04	2.6E-04	4.7E-05	6.4E-05	1.0E-04
	1	5.7E-03	1.5E-01	3.7E-02	2.1E-04	8.6E+00	8.7E-01	2.8E+01	2.8E-05	4.4E-04	2.8E+01	9.6E-04	4.7E-05	3.2E-05	3.2E-05	1.6E-05	4.9E-04	2.1E-04	3.9E-05	5.3E-05	8.6E-05
	2	6.9E-03	1.8E-01	4.5E-02	2.5E-04	1.0E+01	1.0E+00	3.4E+01	3.4E-05	5.3E-04	3.4E+01	1.2E-03	5.6E-05	3.9E-05	3.8E-05	1.9E-05	5.9E-04	2.6E-04	4.7E-05	6.4E-05	1.0E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	2.9E-03	7.4E-02	1.9E-02	1.1E-04	4.3E+00	4.3E-01	1.4E+01	1.4E-05	2.2E-04	1.4E+01	4.8E-04	2.3E-05	1.6E-05	1.6E-05	8.0E-06	2.5E-04	1.1E-04	2.0E-05	2.7E-05	4.3E-05
	W1	3.5E-03	9.1E-02	2.3E-02	1.3E-04	5.3E+00	5.3E-01	1.7E+01	1.7E-05	2.7E-04	1.7E+01	5.9E-04	2.9E-05	2.0E-05	2.0E-05	9.9E-06	3.0E-04	1.3E-04	2.4E-05	3.3E-05	5.3E-05
	S1.5	3.4E-03	8.8E-02	2.2E-02	1.2E-04	5.1E+00	5.1E-01	1.7E+01	1.7E-05	2.6E-04	1.7E+01	5.7E-04	2.7E-05	1.9E-05	1.9E-05	9.5E-06	2.9E-04	1.3E-04	2.3E-05	3.1E-05	5.1E-05
	W2	3.5E-03	9.1E-02	2.3E-02	1.3E-04	5.3E+00	5.3E-01	1.7E+01	1.7E-05	2.7E-04	1.7E+01	5.9E-04	2.9E-05	2.0E-05	2.0E-05	9.9E-06	3.0E-04	1.3E-04	2.4E-05	3.3E-05	5.3E-05
	S2.5	1.3E-02	3.4E-01	8.5E-02	4.8E-04	2.0E+01	2.0E+00	6.5E+01	6.5E-05	1.0E-03	6.5E+01	2.2E-03	1.1E-04	7.4E-05	7.3E-05	3.7E-05	1.1E-03	4.9E-04	9.0E-05	1.2E-04	2.0E-04
Dunbar	Monthly	2.9E-03	7.7E-02	1.9E-02	1.1E-04	4.4E+00	4.5E-01	1.4E+01	1.5E-05	2.2E-04	1.5E+01	4.9E-04	2.4E-05	1.7E-05	1.6E-05	8.3E-06	2.5E-04	1.1E-04	2.0E-05	2.7E-05	4.4E-05
	-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0	1.6E-02	4.1E-01	1.0E-01	5.9E-04	2.4E+01	2.4E+00	7.8E+01	7.9E-05	1.2E-03	7.8E+01	2.7E-03	1.3E-04	9.0E-05	8.8E-05	4.5E-05	1.4E-03	5.9E-04	1.1E-04	1.5E-04	2.4E-04
	1	7.7E-03	2.0E-01	4.9E-02	2.8E-04	1.2E+01	1.2E+00	3.8E+01	3.8E-05	5.8E-04	3.8E+01	1.3E-03	6.2E-05	4.3E-05	4.3E-05	2.1E-05	6.6E-04	2.9E-04	5.2E-05	7.1E-05	1.2E-04
	2	2.4E-02	6.1E-01	1.5E-01	8.7E-04	3.5E+01	3.6E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.6E-05	2.0E-03	8.8E-04	1.6E-04	2.2E-04	3.5E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W1	1.1E-02	2.8E-01	6.9E-02	3.9E-04	1.6E+01	1.6E+00	5.2E+01	5.3E-05	8.1E-04	5.2E+01	1.8E-03	8.6E-05	6.0E-05	5.9E-05	3.0E-05	9.1E-04	4.0E-04	7.2E-05	9.8E-05	1.6E-04
	S1.5	1.3E-02	3.4E-01	8.4E-02	4.8E-04	1.9E+01	2.0E+00	6.4E+01	6.4E-05	9.9E-04	6.4E+01	2.2E-03	1.1E-04	7.3E-05	7.2E-05	3.6E-05	1.1E-03	4.8E-04	8.8E-05	1.2E-04	1.9E-04
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	2.4E-02	6.1E-01	1.5E-01	8.7E-04	3.5E+01	3.6E+00	1.2E+02	1.2E-04	1.8E-03	1.2E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.6E-05	2.0E-03	8.8E-04	1.6E-04	2.2E-04	3.5E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

Construction Camps and Storage Yards

Speciated Supply Truck Trip Emissions Summary for areas outside the PM $_{2.5}$ NAA

		Emissions (tons)																		
Camp Name	**Time Period**	**VOC**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**N_2O**	**CH_4**	**CO_2e**	**Total HAPs**	**Benzene**	**Toluene**	**Xylenes**	**1,3-Butadiene**	**Formaldehyde**	**Acetaldehyde**	**Acrolein**	**Napthalene**	**Total PAH**
Healy	Monthly	2.2E-03	5.8E-02	1.4E-02	8.1E-05	3.3E+00	3.4E-01	1.1E+01	1.1E-05	1.7E-04	1.1E+01	3.7E-04	1.8E-05	1.3E-05	1.2E-05	6.2E-06	1.9E-04	8.3E-05	1.5E-05	2.1E-05	3.3E-05
	-1	1.6E-02	4.0E-01	1.0E-01	5.7E-04	2.3E+01	2.4E+00	7.6E+01	7.7E-05	1.2E-03	7.6E+01	2.6E-03	1.3E-04	8.8E-05	8.6E-05	4.4E-05	1.3E-03	5.8E-04	1.1E-04	1.4E-04	2.3E-04
	0	2.1E-02	5.6E-01	1.4E-01	7.8E-04	3.2E+01	3.2E+00	1.0E+02	1.1E-04	1.6E-03	1.0E+02	3.6E-03	1.7E-04	1.2E-04	1.2E-04	6.0E-05	1.8E-03	8.0E-04	1.5E-04	2.0E-04	3.2E-04
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	2.4E-02	6.1E-01	1.5E-01	8.6E-04	3.5E+01	3.6E+00	1.1E+02	1.2E-04	1.8E-03	1.1E+02	3.9E-03	1.9E-04	1.3E-04	1.3E-04	6.6E-05	2.0E-03	8.8E-04	1.6E-04	2.2E-04	3.5E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	1.2E-02	3.1E-01	7.7E-02	4.4E-04	1.8E+01	1.8E+00	5.9E+01	6.0E-05	9.1E-04	5.9E+01	2.0E-03	9.7E-05	6.8E-05	6.7E-05	3.4E-05	1.0E-03	4.5E-04	8.2E-05	1.1E-04	1.8E-04
	S0.5	1.2E-02	3.0E-01	7.5E-02	4.2E-04	1.7E+01	1.8E+00	5.6E+01	5.7E-05	8.8E-04	5.6E+01	1.9E-03	9.4E-05	6.5E-05	6.4E-05	3.2E-05	9.9E-04	4.3E-04	7.9E-05	1.1E-04	1.7E-04
	W1	1.2E-02	3.1E-01	7.7E-02	4.4E-04	1.8E+01	1.8E+00	5.9E+01	6.0E-05	9.1E-04	5.9E+01	2.0E-03	9.7E-05	6.8E-05	6.7E-05	3.4E-05	1.0E-03	4.5E-04	8.2E-05	1.1E-04	1.8E-04
	S1.5	2.2E-03	5.8E-02	1.4E-02	8.1E-05	3.3E+00	3.4E-01	1.1E+01	1.1E-05	1.7E-04	1.1E+01	3.7E-04	1.8E-05	1.3E-05	1.2E-05	6.2E-06	1.9E-04	8.3E-05	1.5E-05	2.1E-05	3.3E-05
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	3.7E-02	9.6E-01	2.4E-01	1.3E-03	5.5E+01	5.6E+00	1.8E+02	1.8E-04	2.8E-03	1.8E+02	6.2E-03	3.0E-04	2.1E-04	2.0E-04	1.0E-04	3.2E-03	1.4E-03	2.5E-04	3.4E-04	5.5E-04
Cantwell	Monthly	1.9E-03	4.8E-02	1.2E-02	6.8E-05	2.8E+00	2.8E-01	9.0E+00	9.2E-06	1.4E-04	9.1E+00	3.1E-04	1.5E-05	1.0E-05	1.0E-05	5.2E-06	1.6E-04	6.9E-05	1.3E-05	1.7E-05	2.8E-05
	-1	1.0E-02	2.6E-01	6.5E-02	3.7E-04	1.5E+01	1.5E+00	4.9E+01	5.0E-05	7.6E-04	4.9E+01	1.7E-03	8.1E-05	5.6E-05	5.6E-05	2.8E-05	8.6E-04	3.7E-04	6.8E-05	9.3E-05	1.5E-04
	0	2.0E-02	5.1E-01	1.3E-01	7.2E-04	3.0E+01	3.0E+00	9.6E+01	9.8E-05	1.5E-03	9.6E+01	3.3E-03	1.6E-04	1.1E-04	1.1E-04	5.5E-05	1.7E-03	7.3E-04	1.3E-04	1.8E-04	3.0E-04
	1	1.6E-02	4.2E-01	1.1E-01	6.0E-04	2.5E+01	2.5E+00	8.0E+01	8.1E-05	1.2E-03	8.0E+01	2.7E-03	1.3E-04	9.2E-05	9.1E-05	4.6E-05	1.4E-03	6.1E-04	1.1E-04	1.5E-04	2.5E-04
	2	2.0E-02	5.1E-01	1.3E-01	7.2E-04	3.0E+01	3.0E+00	9.6E+01	9.8E-05	1.5E-03	9.6E+01	3.3E-03	1.6E-04	1.1E-04	1.1E-04	5.5E-05	1.7E-03	7.3E-04	1.3E-04	1.8E-04	3.0E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	6.7E-03	1.7E-01	4.3E-02	2.4E-04	1.0E+01	1.0E+00	3.3E+01	3.3E-05	5.1E-04	3.3E+01	1.1E-03	5.4E-05	3.8E-05	3.7E-05	1.9E-05	5.7E-04	2.5E-04	4.5E-05	6.2E-05	1.0E-04
	S0.5	9.6E-03	2.5E-01	6.2E-02	3.5E-04	1.4E+01	1.5E+00	4.7E+01	4.8E-05	7.3E-04	4.7E+01	1.6E-03	7.8E-05	5.4E-05	5.4E-05	2.7E-05	8.3E-04	3.6E-04	6.6E-05	8.9E-05	1.4E-04
	W1	1.0E-02	2.6E-01	6.5E-02	3.7E-04	1.5E+01	1.5E+00	4.9E+01	5.0E-05	7.6E-04	4.9E+01	1.7E-03	8.1E-05	5.6E-05	5.6E-05	2.8E-05	8.6E-04	3.7E-04	6.8E-05	9.3E-05	1.5E-04
	S1.5	9.6E-03	2.5E-01	6.2E-02	3.5E-04	1.4E+01	1.5E+00	4.7E+01	4.8E-05	7.3E-04	4.7E+01	1.6E-03	7.8E-05	5.4E-05	5.4E-05	2.7E-05	8.3E-04	3.6E-04	6.6E-05	8.9E-05	1.4E-04
	W2	1.0E-02	2.6E-01	6.5E-02	3.7E-04	1.5E+01	1.5E+00	4.9E+01	5.0E-05	7.6E-04	4.9E+01	1.7E-03	8.1E-05	5.6E-05	5.6E-05	2.8E-05	8.6E-04	3.7E-04	6.8E-05	9.3E-05	1.5E-04
	S2.5	4.5E-02	1.2E+00	2.9E-01	1.7E-03	6.8E+01	6.9E+00	2.2E+02	2.2E-04	3.4E-03	2.2E+02	7.6E-03	3.7E-04	2.5E-04	2.5E-04	1.3E-04	3.9E-03	1.7E-03	3.1E-04	4.2E-04	6.8E-04
Swan Lake	Monthly	1.1E-03	2.9E-02	7.2E-03	4.0E-05	1.7E+00	1.7E-01	5.4E+00	5.5E-06	8.4E-05	5.4E+00	1.9E-04	9.0E-06	6.3E-06	6.2E-06	3.1E-06	9.5E-05	4.2E-05	7.6E-06	1.0E-05	1.7E-05
	-1	4.9E-03	1.3E-01	3.2E-02	1.8E-04	7.3E+00	7.4E-01	2.4E+01	2.4E-05	3.7E-04	2.4E+01	8.2E-04	4.0E-05	2.8E-05	2.7E-05	1.4E-05	4.2E-04	1.8E-04	3.3E-05	4.5E-05	7.3E-05
	0	1.1E-02	2.8E-01	6.9E-02	3.9E-04	1.6E+01	1.6E+00	5.2E+01	5.3E-05	8.1E-04	5.2E+01	1.8E-03	8.6E-05	6.0E-05	5.9E-05	3.0E-05	9.1E-04	4.0E-04	7.3E-05	9.9E-05	1.6E-04
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	1.2E-02	3.1E-01	7.6E-02	4.3E-04	1.8E+01	1.8E+00	5.7E+01	5.8E-05	9.0E-04	5.7E+01	2.0E-03	9.5E-05	6.6E-05	6.5E-05	3.3E-05	1.0E-03	4.4E-04	8.0E-05	1.1E-04	1.8E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	3.1E-03	8.1E-02	2.0E-02	1.1E-04	4.7E+00	4.7E-01	1.5E+01	1.5E-05	2.4E-04	1.5E+01	5.2E-04	2.5E-05	1.8E-05	1.7E-05	8.7E-06	2.7E-04	1.2E-04	2.1E-05	2.9E-05	4.7E-05
	S0.5	5.8E-03	1.5E-01	3.7E-02	2.1E-04	8.7E+00	8.8E-01	2.8E+01	2.9E-05	4.4E-04	2.8E+01	9.6E-04	4.7E-05	3.3E-05	3.2E-05	1.6E-05	5.0E-04	2.2E-04	3.9E-05	5.4E-05	8.7E-05
	W1	6.0E-03	1.6E-01	3.9E-02	2.2E-04	9.0E+00	9.1E-01	2.9E+01	3.0E-05	4.6E-04	2.9E+01	1.0E-03	4.9E-05	3.4E-05	3.3E-05	1.7E-05	5.1E-04	2.2E-04	4.1E-05	5.6E-05	9.0E-05
	S1.5	1.1E-03	2.9E-02	7.2E-03	4.0E-05	1.7E+00	1.7E-01	5.4E+00	5.5E-06	8.4E-05	5.4E+00	1.9E-04	9.0E-06	6.3E-06	6.2E-06	3.1E-06	9.5E-05	4.2E-05	7.6E-06	1.0E-05	1.7E-05
	W2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S2.5	1.6E-02	4.0E-01	1.0E-01	5.7E-04	2.3E+01	2.4E+00	7.5E+01	7.7E-05	1.2E-03	7.6E+01	2.6E-03	1.3E-04	8.8E-05	8.6E-05	4.4E-05	1.3E-03	5.8E-04	1.1E-04	1.4E-04	2.3E-04
Rustic Wilderness	Monthly	8.5E-04	2.2E-02	5.5E-03	3.1E-05	1.3E+00	1.3E-01	4.1E+00	4.2E-06	6.5E-05	4.1E+00	1.4E-04	6.9E-06	4.8E-06	4.7E-06	2.4E-06	7.3E-05	3.2E-05	5.8E-06	7.9E-06	1.3E-05
	-1	5.3E-03	1.4E-01	3.4E-02	1.9E-04	8.0E+00	8.0E-01	2.6E+01	2.6E-05	4.0E-04	2.6E+01	8.8E-04	4.3E-05	3.0E-05	2.9E-05	1.5E-05	4.5E-04	2.0E-04	3.6E-05	4.9E-05	8.0E-05
	0	9.0E-03	2.3E-01	5.8E-02	3.3E-04	1.4E+01	1.4E+00	4.4E+01	4.5E-05	6.9E-04	4.4E+01	1.5E-03	7.3E-05	5.1E-05	5.0E-05	2.5E-05	7.8E-04	3.4E-04	6.2E-05	8.4E-05	1.4E-04
	1	5.3E-03	1.4E-01	3.4E-02	1.9E-04	8.0E+00	8.0E-01	2.6E+01	2.6E-05	4.0E-04	2.6E+01	8.8E-04	4.3E-05	3.0E-05	2.9E-05	1.5E-05	4.5E-04	2.0E-04	3.6E-05	4.9E-05	8.0E-05
	2	9.0E-03	2.3E-01	5.8E-02	3.3E-04	1.4E+01	1.4E+00	4.4E+01	4.5E-05	6.9E-04	4.4E+01	1.5E-03	7.3E-05	5.1E-05	5.0E-05	2.5E-05	7.8E-04	3.4E-04	6.2E-05	8.4E-05	1.4E-04
	Rolling Annual	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	S0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	W0	3.8E-03	9.7E-02	2.4E-02	1.4E-04	5.6E+00	5.7E-01	1.8E+01	1.9E-05	2.9E-04	1.8E+01	6.3E-04	3.0E-05	2.1E-05	2.1E-05	1.1E-05	3.2E-04	1.4E-04	2.6E-05	3.5E-05	5.6E-05
	S0.5	4.4E-03	1.2E-01	2.9E-02	1.6E-04	6.7E+00	6.7E-01	2.2E+01	2.2E-05	3.4E-04	2.2E+01	7.4E-04	3.6E-05	2.5E-05	2.5E-05	1.2E-05	3.8E-04	1.7E-04	3.0E-05	4.1E-05	6.7E-05
	W1	4.6E-03	1.2E-01	3.0E-02	1.7E-04	6.9E+00	7.0E-01	2.2E+01	2.3E-05	3.5E-04	2.2E+01	7.7E-04	3.7E-05	2.6E-05	2.6E-05	1.3E-05	4.0E-04	1.7E-04	3.1E-05	4.3E-05	6.9E-05
	S1.5	4.4E-03	1.2E-01	2.9E-02	1.6E-04	6.7E+00	6.7E-01	2.2E+01	2.2E-05	3.4E-04	2.2E+01	7.4E-04	3.6E-05	2.5E-05	2.5E-05	1.2E-05	3.8E-04	1.7E-04	3.0E-05	4.1E-05	6.7E-05
	W2	2.4E-03	6.2E-02	1.5E-02	8.7E-05	3.6E+00	3.6E-01	1.2E+01	1.2E-05	1.8E-04	1.2E+01	4.0E-04	1.9E-05	1.3E-05	1.3E-05	6.7E-06	2.0E-04	8.9E-05	1.6E-05	2.2E-05	3.6E-05
	S2.5	1.9E-02	5.0E-01	1.3E-01	7.1E-04	2.9E+01	3.0E+00	9.4E+01	9.7E-05	1.5E-03	9.5E+01	3.3E-03	1.6E-04	1.1E-04	1.1E-04	5.5E-05	1.7E-03	7.3E-04	1.3E-04	1.8E-04	2.9E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

Annual Emissions Summary

Year	Emissions (tons)										
-2	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.01	0.18	0.15	1.06E-03	0.013	0.013	0.105	2.0E-07	2.0E-06	1.1E-01	3.3E-03
Onroad Equipment	0.13	1.25	3.68	3.68E-03	0.10	0.08	288	2.70E-03	0.007	2.9E+02	0.18
NONRoad Equipment	4.89	85.5	35.8	0.11	5.16	5.16	11,313	0.09	0.46	1.1E+04	0.45
ANNUAL TOTAL	**5.03**	**86.9**	**39.7**	**0.11**	**5.27**	**5.25**	**11,601**	**0.09**	**0.47**	**11,641**	**0.63**

	Emissions (tons)										
-1	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.12	2.12	1.78	0.013	0.16	0.16	1.26	2.4E-06	2.4E-05	1.26	0.040
Onroad Equipment	1.60	15.1	44.1	0.044	1.18	0.94	3,459	0.032	0.088	3,471	2.18
NONRoad Equipment	58.6	1026	430	1.28	61.9	61.9	135,755	1.10	5.51	136,221	5.37
ANNUAL TOTAL	**60.4**	**1043**	**476**	**1.34**	**63.2**	**63.0**	**139,215**	**1.13**	**5.59**	**139,693**	**7.59**

	Emissions (tons)										
0	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.33	6.07	5.10	0.036	0.46	0.46	3.62	6.8E-06	6.8E-05	3.63	0.11
Onroad Equipment	3.48	29.6	102.4	0.10	2.43	1.91	7,429	0.074	0.19	7,456	4.88
NONRoad Equipment	75.2	1268	499	1.58	76.1	76.1	166,648	1.35	6.76	167,220	6.60
ANNUAL TOTAL	**79.0**	**1304**	**607**	**1.71**	**79.0**	**78.5**	**174,081**	**1.43**	**6.95**	**174,680**	**11.6**

	Emissions (tons)										
1	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.16	2.84	2.38	0.017	0.22	0.22	1.69	3.2E-06	3.2E-05	1.69	0.054
Onroad Equipment	1.34	11.9	38.3	0.038	0.96	0.76	2,881	0.028	0.073	2,891	1.82
NONRoad Equipment	29.5	487	185	0.60	29.1	29.1	63,920	0.52	2.59	64,140	2.53
ANNUAL TOTAL	**31.0**	**502**	**226**	**0.66**	**30.3**	**30.1**	**66,803**	**0.55**	**2.67**	**67,033**	**4.41**

	Emissions (tons)										
2	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.23	4.24	3.56	0.025	0.32	0.32	2.53	4.8E-06	4.8E-05	2.53	0.080
Onroad Equipment	1.67	19.8	35.5	0.038	1.38	1.14	3,553	0.029	0.091	3,563	2.32
NONRoad Equipment	19.7	294	88.2	0.35	17.5	17.5	37,554	0.30	1.52	37,683	1.49
ANNUAL TOTAL	**21.6**	**318**	**127**	**0.42**	**19.2**	**18.9**	**41,109**	**0.33**	**1.61**	**41,249**	**3.89**

	Emissions (tons)										
3	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Onsite Sources	0.27	4.97	4.17	0.030	0.38	0.38	2.96	5.6E-06	5.6E-05	2.97	0.094
Onroad Equipment	3.05	36.2	64.3	0.068	2.52	2.09	6,462	0.052	0.17	6,482	4.31
NONRoad Equipment	23.4	346	109	0.42	21.0	21.0	44,052	0.36	1.79	44,204	1.74
ANNUAL TOTAL	**26.7**	**387**	**177**	**0.51**	**23.9**	**23.5**	**50,518**	**0.41**	**1.95**	**50,688**	**6.15**

Notes:

(1) Onsite sources include emissions from stationary sources (i.e. boilers)

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

Construction Activity Emissions Summary

		Emissions (tons)										
Construction Activity	Time Period	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e	Total HAPs
Phase I(a)	Monthly	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	-2	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	-1	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	0	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	1	20.1	348	159	0.45	21.1	21.0	46,405	0.38	1.86	46,564	2.53
	Rolling Annual	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	W-0.5	25.2	435	198	0.56	26.4	26.3	58,006	0.47	2.33	58,205	3.16
	S0	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	W0	25.2	435	198	0.56	26.4	26.3	58,006	0.47	2.33	58,205	3.16
	S0.5	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	W1	25.2	435	198	0.56	26.4	26.3	58,006	0.47	2.33	58,205	3.16
Phase I(b)	Monthly	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	-1	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	0	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	Rolling Annual	30.2	521	238	0.67	31.6	31.5	69,607	0.57	2.80	69,846	3.80
	S0	25.15	435	198	0.56	26.4	26.3	58,006	0.47	2.33	58,205	3.16
	W0	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
	S0.5	25.15	435	198	0.56	26.4	26.3	58,006	0.47	2.33	58,205	3.16
	W1	5.03	86.9	39.7	0.11	5.27	5.25	11,601	0.094	0.47	11,641	0.63
Phase II	Monthly	1.21	16.8	6.34	0.022	1.00	0.99	2,213	0.018	0.09	2,221	0.16
	1	6.04	84.0	31.7	0.11	5.01	4.96	11,065	0.090	0.44	11,103	0.80
	Rolling Annual	6.04	84.0	31.7	0.11	5.01	4.96	11,065	0.090	0.44	11,103	0.80
	W1	4.83	67.2	25.4	0.089	4.01	3.97	8,852	0.072	0.35	8,882	0.64
	S1.5	1.21	16.8	6.34	0.022	1.00	0.99	2,213	0.018	0.09	2,221	0.16
Phase IV(a)	Monthly	1.27	16.8	8.26	0.023	1.04	1.02	2,284	0.019	0.09	2,292	0.26
	0	6.34	84.2	41.3	0.12	5.20	5.11	11,420	0.096	0.44	11,460	1.31
	Rolling Annual	6.34	84.2	41.3	0.12	5.20	5.11	11,420	0.096	0.44	11,460	1.31
	W0	5.07	67.3	33.1	0.094	4.16	4.09	9,136	0.077	0.35	9,168	1.05
	S0.5	1.27	16.8	8.26	0.023	1.04	1.02	2,284	0.019	0.09	2,292	0.26
Phase IV(b)	Monthly	1.22	17.6	8.84	0.025	1.04	1.03	2,333	0.020	0.091	2,341	0.27
	0	1.22	17.6	8.84	0.025	1.04	1.03	2,333	0.020	0.091	2,341	0.27
	1	4.88	70.4	35.3	0.10	4.18	4.10	9,333	0.078	0.36	9,365	1.07
	Rolling Annual	7.32	106	53.0	0.15	6.27	6.15	13,999	0.12	0.54	14,048	1.61
	W1	7.32	106	53.0	0.15	6.27	6.15	13,999	0.12	0.54	14,048	1.61
Phase IV(c)	Monthly	1.23	17.68	8.93	0.025	1.06	1.04	2,346	0.020	0.09	2,354	0.27
	0	11.1	159	80.4	0.23	9.54	9.37	21,113	0.18	0.82	21,186	2.42
	Rolling Annual	12.3	177	89.3	0.25	10.6	10.4	23,458	0.20	0.91	23,540	2.69
	W0	2.46	35.4	17.9	0.051	2.12	2.08	4,692	0.039	0.18	4,708	0.54
	S0.5	7.39	106	53.6	0.15	6.36	6.25	14,075	0.12	0.55	14,124	1.61
	W1	2.46	35.4	17.9	0.051	2.12	2.08	4,692	0.039	0.18	4,708	0.54
Phase V	Monthly	1.83	26.6	9.32	0.035	1.58	1.57	3,420	0.028	0.14	3,432	0.22
	2	11.0	160	55.9	0.21	9.46	9.40	20,522	0.17	0.82	20,592	1.33
	Rolling Annual	11.0	160	55.9	0.21	9.46	9.40	20,522	0.17	0.82	20,592	1.33
	W2	7.30	106	37.3	0.14	6.31	6.27	13,681	0.11	0.55	13,728	0.89
	S2.5	3.65	53.2	18.6	0.069	3.15	3.13	6,841	0.056	0.27	6,864	0.44
Phase VI	Monthly	2.67	39.7	17.8	0.053	2.43	2.39	5,147	0.042	0.20	5,164	0.64
	2	10.7	159	71.4	0.21	9.72	9.55	20,587	0.17	0.80	20,656	2.56
	3	21.4	317	143	0.42	19.4	19.1	41,174	0.33	1.59	41,313	5.11
	Rolling Annual	32.0	476	214	0.63	29.2	28.6	61,761	0.50	2.39	61,969	7.67
	S2.5	5.34	79.3	35.7	0.11	4.86	4.77	10,293	0.083	0.40	10,328	1.28
	W3	16.0	238	107	0.32	14.6	14.3	30,880	0.25	1.19	30,984	3.83
	S3.5	10.7	159	71.4	0.21	9.72	9.55	20,587	0.17	0.80	20,656	2.56
FCO	Monthly	1.08	13.9	6.92	0.019	0.90	0.88	1,869	0.015	0.072	1,875	0.21
	3	5.39	69.6	34.6	0.094	4.49	4.41	9,344	0.077	0.36	9,376	1.04
	Rolling Annual	5.39	69.6	34.6	0.094	4.49	4.41	9,344	0.077	0.36	9,376	1.04
	W3	4.31	55.7	27.7	0.075	3.59	3.53	7,475	0.061	0.29	7,501	0.83
	S3.5	1.08	13.9	6.92	0.019	0.90	0.88	1,869	0.015	0.072	1,875	0.21

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

Stationary Source Emissions Summary

		Emissions (ton/month)[a]															
Equipment	**Quantity**	**VOC**	**Nox**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**CO2e**	**Total HAPs**	**Benzene**	**Toluene**	**Formaldehyde**	**Napthalene**	**Total PAH**
Phase I(a) - Gravel Placement																	
600 MBTU Boiler	5	5.8E-03	1.1E-01	8.9E-02	6.4E-04	8.0E-03	8.0E-03	6.3E-02	1.2E-07	1.2E-06	6.3E-02	2.0E-03	2.2E-06	3.6E-06	7.9E-05	6.5E-07	7.0E-07
1 MMBTU Boiler	2	3.9E-03	7.1E-02	5.9E-02	4.2E-04	5.4E-03	5.4E-03	4.2E-02	7.9E-08	7.9E-07	4.2E-02	1.3E-03	1.5E-06	2.4E-06	5.3E-05	4.3E-07	4.6E-07
Phase I(b) - Gravel Farming/Compaction																	
600 MBTU Boiler	5	5.8E-03	1.1E-01	8.9E-02	6.4E-04	8.0E-03	8.0E-03	6.3E-02	1.2E-07	1.2E-06	6.3E-02	2.0E-03	2.2E-06	3.6E-06	7.9E-05	6.5E-07	7.0E-07
1 MMBTU Boiler	2	3.9E-03	7.1E-02	5.9E-02	4.2E-04	5.4E-03	5.4E-03	4.2E-02	7.9E-08	7.9E-07	4.2E-02	1.3E-03	1.5E-06	2.4E-06	5.3E-05	4.3E-07	4.6E-07
Phase II - Interconnecting Pipelines and Hydrotesting																	
600 MBTU Boiler	4	4.7E-03	8.5E-02	7.1E-02	5.1E-04	6.4E-03	6.4E-03	5.1E-02	9.5E-08	9.5E-07	5.1E-02	1.6E-03	1.8E-06	2.9E-06	6.4E-05	5.2E-07	5.6E-07
1 MMBTU Boiler	2	3.9E-03	7.1E-02	5.9E-02	4.2E-04	5.4E-03	5.4E-03	4.2E-02	7.9E-08	7.9E-07	4.2E-02	1.3E-03	1.5E-06	2.4E-06	5.3E-05	4.3E-07	4.6E-07
Phase IV(a) - Install Permanent Camp and Office Piles																	
600 MBTU Boiler	2	2.3E-03	4.2E-02	3.6E-02	2.5E-04	3.2E-03	3.2E-03	2.5E-02	4.8E-08	4.8E-07	2.5E-02	8.0E-04	8.9E-07	1.4E-06	3.2E-05	2.6E-07	2.8E-07
1 MMBTU Boiler	2	3.9E-03	7.1E-02	5.9E-02	4.2E-04	5.4E-03	5.4E-03	4.2E-02	7.9E-08	7.9E-07	4.2E-02	1.3E-03	1.5E-06	2.4E-06	5.3E-05	4.3E-07	4.6E-07
Phase IV(b) - Install Permanent Camps, Offices, Shops, and Warehouse																	
600 MBTU Boiler	6	7.0E-03	1.3E-01	1.1E-01	7.6E-04	9.7E-03	9.7E-03	7.6E-02	1.4E-07	1.4E-06	7.6E-02	2.4E-03	2.7E-06	4.3E-06	9.5E-05	7.8E-07	8.3E-07
1 MMBTU Boiler	6	1.2E-02	2.1E-01	1.8E-01	1.3E-03	1.6E-02	1.6E-02	1.3E-01	2.4E-07	2.4E-06	1.3E-01	4.0E-03	4.4E-06	7.2E-06	1.6E-04	1.3E-06	1.4E-06
Phase IV(c) - Install Temporary Construction Camp																	
600 MBTU Boiler	6	7.0E-03	1.3E-01	1.1E-01	7.6E-04	9.7E-03	9.7E-03	7.6E-02	1.4E-07	1.4E-06	7.6E-02	2.4E-03	2.7E-06	4.3E-06	9.5E-05	7.8E-07	8.3E-07
1 MMBTU Boiler	6	1.2E-02	2.1E-01	1.8E-01	1.3E-03	1.6E-02	1.6E-02	1.3E-01	2.4E-07	2.4E-06	1.3E-01	4.0E-03	4.4E-06	7.2E-06	1.6E-04	1.3E-06	1.4E-06
Phase V - Install GCF Module Support Piles																	
600 MBTU Boiler	6	7.0E-03	1.3E-01	1.1E-01	7.6E-04	9.7E-03	9.7E-03	7.6E-02	1.4E-07	1.4E-06	7.6E-02	2.4E-03	2.7E-06	4.3E-06	9.5E-05	7.8E-07	8.3E-07
1 MMBTU Boiler	6	1.2E-02	2.1E-01	1.8E-01	1.3E-03	1.6E-02	1.6E-02	1.3E-01	2.4E-07	2.4E-06	1.3E-01	4.0E-03	4.4E-06	7.2E-06	1.6E-04	1.3E-06	1.4E-06
Phase VI - Install GCF Modules																	
600 MBTU Boiler	6	7.0E-03	1.3E-01	1.1E-01	7.6E-04	9.7E-03	9.7E-03	7.6E-02	1.4E-07	1.4E-06	7.6E-02	2.4E-03	2.7E-06	4.3E-06	9.5E-05	7.8E-07	8.3E-07
1 MMBTU Boiler	12	2.3E-02	4.2E-01	3.6E-01	2.5E-03	3.2E-02	3.2E-02	2.5E-01	4.8E-07	4.8E-06	2.5E-01	8.0E-03	8.9E-06	1.4E-05	3.2E-04	2.6E-06	2.8E-06
FCO																	
600 MBTU Boiler	2	2.3E-03	4.2E-02	3.6E-02	2.5E-04	3.2E-03	3.2E-03	2.5E-02	4.8E-08	4.8E-07	2.5E-02	8.0E-04	8.9E-07	1.4E-06	3.2E-05	2.6E-07	2.8E-07
1 MMBTU Boiler	2	3.9E-03	7.1E-02	5.9E-02	4.2E-04	5.4E-03	5.4E-03	4.2E-02	7.9E-08	7.9E-07	4.2E-02	1.3E-03	1.5E-06	2.4E-06	5.3E-05	4.3E-07	4.6E-07

Notes

[a] Emission Rate (tons/month) = Emission Rate (lb/hr) * quantity * hours/month / 2000 (lb/ton)

(1) Onsite sources include all stationary sources. Mobile equipment (i.e. nonroad and onroad equipment) are not included

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
GCF Construction
MOVES Equipment: Emissions Calculations

							Emissions Rates (g/mile) [b]															
Equipment	Category	MOVES Vehicle Category	Quantity	Average Speed (mph)	Hours/ Month [a]	Miles/ Month	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acrolein	Napthalene	Total PAH
Phase I(a) - Gravel Placement																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	15	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase I(b) - Gravel Farming/Compaction																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	15	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase II - Interconnecting Pipelines and Hydrotesting																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	6	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	1	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase IV(a) - Install Permanent Camp and Office Piles																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase IV(b) - Install Permanent Camps, Offices, Shops, and Warehouse																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase IV(c) - Install Temporary Construction Camp																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase V - Install GCF Module Support Piles																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	6	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	1	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
Phase VI - Install GCF Modules																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	20	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	6	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	15	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
FCO																							
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	10	25	720	18000	0.23	0.85	9.01	8.0E-03	1.1E-01	7.8E-02	457	6.1E-03	1.2E-02	1.0E-02	2.0E-02	1.7E-02	7.6E-04	2.8E-03	1.7E-04	5.6E-04	9.1E-04
SUV Excursion	Pickup Trucks/Buses	Passenger Car	1	25	720	18000	0.05	0.27	4.42	5.9E-03	6.7E-02	4.5E-02	336	1.9E-03	5.4E-03	2.5E-03	4.9E-03	4.0E-03	1.8E-04	5.6E-04	3.3E-05	1.2E-04	2.7E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	4	25	720	18000	0.53	8.28	6.15	8.0E-03	5.1E-01	4.4E-01	1111	6.5E-03	2.9E-02	4.8E-03	3.9E-03	3.6E-03	1.5E-03	4.3E-02	3.5E-03	4.7E-03	7.7E-03

[a] Operating hours assumed to be 720 hours per month, as data was not provided

[b] Emission rates are calculated based on an average of winter and summer emissions rates from the EPA MOVES Model for the North Slope Borough, using default fuel formulation, meteorology, fuel type mixture, and age distribution for 2016.

[c] Emission Rate (tons/month) = Emission Rate (g/mile) * quantity * Miles/month / 453.6 (lb/g) / 2000 (lb/ton)

[d] CO2e = CO2 + CH4 * 25 + N2O *2 98

2016 Efs conservatively used to estimate emissions for all project years.

All North Slope roads assumed to be Rural Unrestricted road type.

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project
GCF Construction
MOVES Equipment: Emissions Calculations

							Emissions (tons/month)[c]																				
Equipment	Category	MOVES Vehicle Category	Quantity	Average Speed (mph)	Hours/ Month [a]	Miles/ Month	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[d]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase I(a) - Gravel Placement																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	15	25	720	18000	6.8E-02	2.5E-01	2.7E+00	2.4E-03	3.3E-02	2.3E-02	1.4E+02	1.8E-03	3.6E-03	1.4E+02	1.0E-01	3.1E-03	6.1E-03	4.9E-03	2.3E-04	8.3E-04	6.8E-02	5.2E-05	1.7E-04	2.7E-04	2.0E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	3.2E-03	1.6E-02	2.6E-01	3.5E-04	4.0E-03	2.7E-03	2.0E+01	1.1E-04	3.2E-04	2.0E+01	4.1E-03	1.5E-04	2.9E-04	2.4E-04	1.1E-05	3.3E-05	3.2E-03	2.0E-06	7.3E-06	1.6E-05	1.9E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	3.1E-02	4.9E-01	3.7E-01	4.8E-04	3.1E-02	2.6E-02	6.6E+01	3.9E-04	1.7E-03	6.6E+01	3.7E-02	2.9E-04	2.3E-04	2.1E-04	8.9E-05	2.5E-03	3.1E-02	2.1E-04	2.8E-04	4.6E-04	1.9E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	3.1E-02	4.9E-01	3.7E-01	4.8E-04	3.1E-02	2.6E-02	6.6E+01	3.9E-04	1.7E-03	6.6E+01	3.7E-02	2.9E-04	2.3E-04	2.1E-04	8.9E-05	2.5E-03	3.1E-02	2.1E-04	2.8E-04	4.6E-04	1.9E-03
Phase I(b) - Gravel Farming/Compaction																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	15	25	720	18000	6.8E-02	2.5E-01	2.7E+00	2.4E-03	3.3E-02	2.3E-02	1.4E+02	1.8E-03	3.6E-03	1.4E+02	1.0E-01	3.1E-03	6.1E-03	4.9E-03	2.3E-04	8.3E-04	6.8E-02	5.2E-05	1.7E-04	2.7E-04	2.0E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	3.2E-03	1.6E-02	2.6E-01	3.5E-04	4.0E-03	2.7E-03	2.0E+01	1.1E-04	3.2E-04	2.0E+01	4.1E-03	1.5E-04	2.9E-04	2.4E-04	1.1E-05	3.3E-05	3.2E-03	2.0E-06	7.3E-06	1.6E-05	1.9E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	3.1E-02	4.9E-01	3.7E-01	4.8E-04	3.1E-02	2.6E-02	6.6E+01	3.9E-04	1.7E-03	6.6E+01	3.7E-02	2.9E-04	2.3E-04	2.1E-04	8.9E-05	2.5E-03	3.1E-02	2.1E-04	2.8E-04	4.6E-04	1.9E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	3	25	720	18000	3.1E-02	4.9E-01	3.7E-01	4.8E-04	3.1E-02	2.6E-02	6.6E+01	3.9E-04	1.7E-03	6.6E+01	3.7E-02	2.9E-04	2.3E-04	2.1E-04	8.9E-05	2.5E-03	3.1E-02	2.1E-04	2.8E-04	4.6E-04	1.9E-03
Phase II - Interconnecting Pipelines and Hydrotesting																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	6	25	720	18000	2.7E-02	1.0E-01	1.1E+00	9.5E-04	1.3E-02	9.3E-03	5.4E+01	7.3E-04	1.4E-03	5.5E+01	3.7E-02	1.2E-03	2.4E-03	2.0E-03	9.0E-05	3.3E-04	2.7E-02	2.1E-05	6.6E-05	1.1E-04	3.2E-03
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	2.1E-03	1.1E-02	1.8E-01	2.4E-04	2.7E-03	1.8E-03	1.3E+01	7.6E-05	2.1E-04	1.3E+01	2.7E-03	1.0E-04	1.9E-04	1.6E-04	7.2E-06	2.2E-05	2.1E-03	1.3E-06	4.9E-06	1.1E-05	8.5E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	1	25	720	18000	1.0E-02	1.6E-01	1.2E-01	1.6E-04	1.0E-02	8.8E-03	2.2E+01	1.3E-04	5.7E-04	2.2E+01	1.2E-02	9.5E-05	7.8E-05	7.0E-05	3.0E-05	8.5E-04	1.0E-02	6.9E-05	9.3E-05	1.5E-04	2.1E-04
Phase IV(a) - Install Permanent Camp and Office Piles																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	8.1E-02	3.0E-01	3.2E+00	2.8E-03	4.0E-02	2.8E-02	1.6E+02	2.2E-03	4.3E-03	1.6E+02	1.3E-01	3.7E-03	7.3E-03	5.9E-03	2.7E-04	9.9E-04	8.1E-02	6.2E-05	2.0E-04	3.3E-04	2.9E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	2.1E-03	1.1E-02	1.8E-01	2.4E-04	2.7E-03	1.8E-03	1.3E+01	7.6E-05	2.1E-04	1.3E+01	2.7E-03	1.0E-04	1.9E-04	1.6E-04	7.2E-06	2.2E-05	2.1E-03	1.3E-06	4.9E-06	1.1E-05	8.5E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
Phase IV(b) - Install Permanent Camps, Offices, Shops, and Warehouse																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	8.1E-02	3.0E-01	3.2E+00	2.8E-03	4.0E-02	2.8E-02	1.6E+02	2.2E-03	4.3E-03	1.6E+02	1.3E-01	3.7E-03	7.3E-03	5.9E-03	2.7E-04	9.9E-04	8.1E-02	6.2E-05	2.0E-04	3.3E-04	2.9E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	2.1E-03	1.1E-02	1.8E-01	2.4E-04	2.7E-03	1.8E-03	1.3E+01	7.6E-05	2.1E-04	1.3E+01	2.7E-03	1.0E-04	1.9E-04	1.6E-04	7.2E-06	2.2E-05	2.1E-03	1.3E-06	4.9E-06	1.1E-05	8.5E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
Phase IV(c) - Install Temporary Construction Camp																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	18	25	720	18000	8.1E-02	3.0E-01	3.2E+00	2.8E-03	4.0E-02	2.8E-02	1.6E+02	2.2E-03	4.3E-03	1.6E+02	1.3E-01	3.7E-03	7.3E-03	5.9E-03	2.7E-04	9.9E-04	8.1E-02	6.2E-05	2.0E-04	3.3E-04	2.9E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	2	25	720	18000	2.1E-03	1.1E-02	1.8E-01	2.4E-04	2.7E-03	1.8E-03	1.3E+01	7.6E-05	2.1E-04	1.3E+01	2.7E-03	1.0E-04	1.9E-04	1.6E-04	7.2E-06	2.2E-05	2.1E-03	1.3E-06	4.9E-06	1.1E-05	8.5E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
Phase V - Install GCF Module Support Piles																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	6	25	720	18000	2.7E-02	1.0E-01	1.1E+00	9.5E-04	1.3E-02	9.3E-03	5.4E+01	7.3E-04	1.4E-03	5.5E+01	3.7E-02	1.2E-03	2.4E-03	2.0E-03	9.0E-05	3.3E-04	2.7E-02	2.1E-05	6.6E-05	1.1E-04	3.2E-03
SUV Excursion	Pickup Trucks/Buses	Passenger Car	1	25	720	18000	1.1E-03	5.3E-03	8.8E-02	1.2E-04	1.3E-03	8.9E-04	6.7E+00	3.8E-05	1.1E-04	6.7E+00	1.3E-03	5.0E-05	9.7E-05	7.9E-05	3.6E-06	1.1E-05	1.1E-03	6.5E-07	2.4E-06	5.4E-06	2.1E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
Phase VI - Install GCF Modules																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	20	25	720	18000	9.1E-02	3.4E-01	3.6E+00	3.2E-03	4.4E-02	3.1E-02	1.8E+02	2.4E-03	4.8E-03	1.8E+02	1.5E-01	4.1E-03	8.1E-03	6.6E-03	3.0E-04	1.1E-03	9.1E-02	6.9E-05	2.2E-04	3.6E-04	3.6E-02
SUV Excursion	Pickup Trucks/Buses	Passenger Car	3	25	720	18000	3.2E-03	1.6E-02	2.6E-01	3.5E-04	4.0E-03	2.7E-03	2.0E+01	1.1E-04	3.2E-04	2.0E+01	4.1E-03	1.5E-04	2.9E-04	2.4E-04	1.1E-05	3.3E-05	3.2E-03	2.0E-06	7.3E-06	1.6E-05	1.9E-04
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	6	25	720	18000	6.3E-02	9.9E-01	7.3E-01	9.5E-04	6.1E-02	5.3E-02	1.3E+02	7.7E-04	3.4E-03	1.3E+02	7.8E-02	5.7E-04	4.7E-04	4.2E-04	1.8E-04	5.1E-03	6.3E-02	4.1E-04	5.6E-04	9.2E-04	7.5E-03
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	15	25	720	18000	1.6E-01	2.5E+00	1.8E+00	2.4E-03	1.5E-01	1.3E-01	3.3E+02	1.9E-03	8.6E-03	3.3E+02	2.2E-01	1.4E-03	1.2E-03	1.1E-03	4.5E-04	1.3E-02	1.6E-01	1.0E-03	1.4E-03	2.3E-03	4.7E-02
FCO																											
Pickups, F-350 Crewcab	Pickup Trucks/Buses	Passenger Truck	10	25	720	18000	4.5E-02	1.7E-01	1.8E+00	1.6E-03	2.2E-02	1.5E-02	9.1E+01	1.2E-03	2.4E-03	9.1E+01	6.4E-02	2.1E-03	4.0E-03	3.3E-03	1.5E-04	5.5E-04	4.5E-02	3.4E-05	1.1E-04	1.8E-04	9.0E-03
SUV Excursion	Pickup Trucks/Buses	Passenger Car	1	25	720	18000	1.1E-03	5.3E-03	8.8E-02	1.2E-04	1.3E-03	8.9E-04	6.7E+00	3.8E-05	1.1E-04	6.7E+00	1.3E-03	5.0E-05	9.7E-05	7.9E-05	3.6E-06	1.1E-05	1.1E-03	6.5E-07	2.4E-06	5.4E-06	2.1E-05
9-15 Passanger Van	Pickup Trucks/Buses	Transit Bus	2	25	720	18000	2.1E-02	3.3E-01	2.4E-01	3.2E-04	2.0E-02	1.8E-02	4.4E+01	2.6E-04	1.1E-03	4.4E+01	2.4E-02	1.9E-04	1.6E-04	1.4E-04	6.0E-05	1.7E-03	2.1E-02	1.4E-04	1.9E-04	3.1E-04	8.3E-04
44 Passenger Bus	Pickup Trucks/Buses	Transit Bus	4	25	720	18000	4.2E-02	6.6E-01	4.9E-01	6.4E-04	4.1E-02	3.5E-02	8.8E+01	5.1E-04	2.3E-03	8.8E+01	5.0E-02	3.8E-04	3.1E-04	2.8E-04	1.2E-04	3.4E-03	4.2E-02	2.7E-04	3.7E-04	6.1E-04	3.3E-03

[a] Operating hours assumed to be 720 hours per month, as data was not provided

[b] Emission rates are calculated based on an average of winter and summer emissions rates from the EPA MOVES Model for the North Slope Boro

[c] Emission Rate (tons/month) = Emission Rate (g/mile) * quantity * Miles/month / 453.6 (lb/g) / 2000 (lb/ton)

[d] CO2e = CO2 + CH4 * 25 + N2O *2 98

2016 Efs conservatively used to estimate emissions for all project years.

All North Slope roads assumed to be Rural Unrestricted road type.

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase I(a) - Gravel Placement																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	6	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	24	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	6	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	3	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	6	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	6	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	8	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	6	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	3	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	6	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																		
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase I(b) - Gravel Farming/Compaction																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	6	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	24	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	6	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	3	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	6	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	6	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	8	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	6	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	3	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	6	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions Rates (g/bhp-hr)																		
										VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase II - Interconnecting Pipelines and Hydrotesting																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	4	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	3	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	0	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																		
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(a) - Install Permanent Camp and Office Piles																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	5	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	12	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																	
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(b) - Install Permanent Camps, Offices, Shops, and Warehouse																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	4	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																	
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(c) - Install Temporary Construction Camp																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	18	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	4	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																		
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase V - Install GCF Module Support Piles																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	4	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	8	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	3	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	6	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	4	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	4	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	3	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	24	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	8	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase VI - Install GCF Modules																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	6	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	6	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	6	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	3	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	6	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	6	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	4	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	20	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	6	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	8	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions Rates (g/bhp-hr)																		
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5 [d]	CO2	N2O	CH4	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
FCO																												
1 T. Flatbed	Tractors/Trailers	400	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Lube Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	2.24	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.18	3.93	1.29	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.18	4.16	1.42	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.37	3.93	1.46	0.0050	0.33	0.33	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	0.40	4.51	3.98	0.0056	0.43	0.43	592	4.81E-03	2.40E-02	3.39E-03	1.49E-03	1.04E-03	9.37E-03	1.42E-04	4.29E-03	2.79E-03	3.36E-04	3.08E-04	6.10E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	0.33	3.83	1.26	0.0050	0.24	0.24	533	4.32E-03	2.16E-02	3.05E-03	1.34E-03	9.31E-04	8.43E-03	1.28E-04	3.86E-03	2.51E-03	3.02E-04	2.77E-04	5.49E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	4	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	6	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	2	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	6	2	0.43	Average LF	720	0.41	0.57	4.34	4.53	0.0055	0.74	0.74	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	2	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	0.87	5.22	6.69	0.0065	0.70	0.70	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	4	2	0.21	Low LF	720	0.48	0.66	5.25	4.34	0.0065	0.98	0.98	692	5.61E-03	2.81E-02	3.96E-03	1.74E-03	1.21E-03	1.10E-02	1.66E-04	5.01E-03	3.26E-03	3.93E-04	3.60E-04	7.13E-04
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	0	2	0.43	Average LF	720	0.41	0.29	4.77	1.69	0.0055	0.50	0.50	587	4.76E-03	2.38E-02	3.36E-03	1.47E-03	1.03E-03	9.28E-03	1.41E-04	4.24E-03	2.76E-03	3.33E-04	3.05E-04	6.04E-04
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	0	2	0.43	Average LF	720	0.37	0.32	4.04	0.82	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	0.17	4.37	0.93	0.0050	0.19	0.19	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	0	2	0.43	Average LF	720	0.37	0.35	4.14	0.95	0.0050	0.27	0.27	528	4.28E-03	2.14E-02	3.02E-03	1.32E-03	9.22E-04	8.35E-03	1.27E-04	3.82E-03	2.48E-03	2.99E-04	2.74E-04	5.44E-04

[a] Parenthetical descriptions are the assumed specific equipment type used to estimate horsepower.

[b] Equipment load factors from Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling (http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10016.pdf

[c] Operating hours assume dto be 720 hours per month, as data was not provided

[d] PM2.5 assumed to be 100% of PM10

[e] Emission Rate (tons/month) = Emission Rate (g/bhp) * quantity * Hours/month * bph * Load Factor / 453.6 (lb/g) / 2000 (lb/ton)

[f] CO2e = CO2 + CH4 * 25 + N2O *2 98

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions (tons/month) [e]																				
										VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase I(a) - Gravel Placement																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	6.2E-02	1.6E+00	3.3E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.7E-03	1.9E+02	7.5E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.9E-04	1.1E-04	9.8E-05	1.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	1.1E-01	1.4E+00	2.9E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	1.1E-01	1.4E+00	2.9E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	6	2	0.43	Average LF	720	0.37	1.3E-01	1.7E+00	3.4E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	3.6E-02	4.2E-01	9.8E-02	5.1E-04	2.7E-02	2.7E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.4E-05	8.5E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	24	2	0.59	High LF	720	0.37	1.4E+00	3.0E+01	1.7E+01	3.9E-02	1.8E+00	1.8E+00	4.1E+03	3.3E-02	1.7E-01	4.1E+03	1.6E-01	2.3E-02	1.0E-02	7.1E-03	6.5E-02	9.8E-04	3.0E-02	1.9E-02	2.3E-03	2.1E-03	4.2E-03
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	6	2	0.59	High LF	720	0.37	3.0E-01	6.9E+00	2.4E+00	8.4E-03	4.0E-01	4.0E-01	8.9E+02	7.2E-03	3.6E-02	8.9E+02	3.5E-02	5.1E-03	2.2E-03	1.6E-03	1.4E-02	2.1E-04	6.4E-03	4.2E-03	5.1E-04	4.6E-04	9.2E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	8.0E-02	1.8E+00	6.3E-01	2.2E-03	1.1E-01	1.1E-01	2.4E+02	1.9E-03	9.6E-03	2.4E+02	9.4E-03	1.4E-03	5.9E-04	4.1E-04	3.7E-03	5.7E-05	1.7E-03	1.1E-03	1.3E-04	1.2E-04	2.4E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	4	2	0.59	High LF	720	0.37	2.0E-01	4.4E+00	2.5E+00	5.7E-03	2.7E-01	2.7E-01	6.0E+02	4.9E-03	2.4E-02	6.0E+02	2.4E-02	3.4E-03	1.5E-03	1.0E-03	9.5E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.2E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	3	2	0.59	High LF	720	0.37	9.4E-02	2.2E+00	7.4E-01	2.6E-03	1.2E-01	1.2E-01	2.8E+02	2.2E-03	1.1E-02	2.8E+02	1.1E-02	1.6E-03	6.9E-04	4.8E-04	4.4E-03	6.6E-05	2.0E-03	1.3E-03	1.6E-04	1.4E-04	2.9E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.8E-01	4.0E+00	1.4E+00	4.9E-03	2.3E-01	2.3E-01	5.2E+02	4.2E-03	2.1E-02	5.2E+02	2.1E-02	3.0E-03	1.3E-03	9.1E-04	8.2E-03	1.2E-04	3.8E-03	2.4E-03	2.9E-04	2.7E-04	5.3E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	1	2	0.59	High LF	720	0.37	6.5E-02	1.4E+00	4.6E-01	1.8E-03	8.6E-02	8.6E-02	1.9E+02	1.6E-03	7.8E-03	1.9E+02	7.6E-03	1.1E-03	4.8E-04	3.4E-04	3.0E-03	4.6E-05	1.4E-03	9.0E-04	1.1E-04	1.0E-04	2.0E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	6.0E-02	6.8E-01	2.2E-01	9.0E-04	4.2E-02	4.2E-02	9.5E+01	7.7E-04	3.8E-03	9.5E+01	3.8E-03	5.4E-04	2.4E-04	1.7E-04	1.5E-03	2.3E-05	6.9E-04	4.5E-04	5.4E-05	4.9E-05	9.8E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	6	2	0.59	High LF	720	0.37	2.5E-01	2.9E+00	9.4E-01	3.8E-03	1.8E-01	1.8E-01	4.0E+02	3.2E-03	1.6E-02	4.0E+02	1.6E-02	2.3E-03	1.0E-03	7.0E-04	6.3E-03	9.5E-05	2.9E-03	1.9E-03	2.3E-04	2.1E-04	4.1E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.1E-01	2.4E+00	8.3E-01	2.9E-03	1.4E-01	1.4E-01	3.1E+02	2.5E-03	1.3E-02	3.1E+02	1.2E-02	1.8E-03	7.8E-04	5.4E-04	4.9E-03	7.5E-05	2.3E-03	1.5E-03	1.8E-04	1.6E-04	3.2E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	6	2	0.21	Low LF	720	0.48	8.2E-02	4.9E-01	6.3E-01	6.1E-04	6.5E-02	6.5E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	2.6E-03	3.7E-04	1.6E-04	1.1E-04	1.0E-03	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	1	2	0.59	High LF	720	0.37	2.1E-02	2.2E-01	8.2E-02	2.8E-04	1.8E-02	1.8E-02	3.0E+01	2.4E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.5E-05	5.2E-05	4.7E-04	7.2E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	3.8E-02	4.5E-01	1.0E-01	5.4E-04	2.9E-02	2.9E-02	5.7E+01	4.7E-04	2.3E-03	5.8E+01	2.3E-03	3.3E-04	1.4E-04	1.0E-04	9.1E-04	1.4E-05	4.2E-04	2.7E-04	3.3E-05	3.0E-05	5.9E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	5.1E-02	5.4E-01	2.0E-01	7.0E-04	4.5E-02	4.5E-02	7.4E+01	6.0E-04	3.0E-03	7.4E+01	2.9E-03	4.2E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.3E-04	3.5E-04	4.2E-05	3.8E-05	7.6E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	3.7E-02	4.2E-01	3.7E-01	5.2E-04	4.1E-02	4.1E-02	5.5E+01	4.5E-04	2.2E-03	5.6E+01	2.2E-03	3.2E-04	1.4E-04	9.7E-05	8.8E-04	1.3E-05	4.0E-04	2.6E-04	3.1E-05	2.9E-05	5.7E-05
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	8	2	0.59	High LF	720	0.37	3.6E-01	4.1E+00	1.3E+00	5.4E-03	2.6E-01	2.6E-01	5.7E+02	4.6E-03	2.3E-02	5.7E+02	2.3E-02	3.3E-03	1.4E-03	1.0E-03	9.0E-03	1.4E-04	4.1E-03	2.7E-03	3.2E-04	3.0E-04	5.9E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.8E-01	2.1E+00	6.7E-01	2.7E-03	1.3E-01	1.3E-01	2.9E+02	2.3E-03	1.2E-02	2.9E+02	1.1E-02	1.6E-03	7.2E-04	5.0E-04	4.5E-03	6.8E-05	2.1E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	3.3E-02	4.0E-01	9.1E-02	4.8E-04	2.5E-02	2.5E-02	5.0E+01	4.1E-04	2.0E-03	5.1E+01	2.0E-03	2.9E-04	1.3E-04	8.8E-05	8.0E-04	1.2E-05	3.6E-04	2.4E-04	2.9E-05	2.6E-05	5.2E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	6	2	0.43	Average LF	720	0.37	1.2E-01	1.5E+00	3.4E-01	1.8E-03	9.4E-02	9.4E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	6	2	0.43	Average LF	720	0.37	1.4E-01	3.4E+00	7.3E-01	3.9E-03	1.5E-01	1.5E-01	4.2E+02	3.4E-03	1.7E-02	4.2E+02	1.6E-02	2.4E-03	1.0E-03	7.3E-04	6.6E-03	1.0E-04	3.0E-03	2.0E-03	2.4E-04	2.2E-04	4.3E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	7.3E-02	5.6E-01	5.8E-01	7.1E-04	9.5E-02	9.5E-02	7.6E+01	6.1E-04	3.1E-03	7.6E+01	3.0E-03	4.3E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.5E-04	3.6E-04	4.3E-05	3.9E-05	7.8E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	2.4E-02	4.0E-01	1.4E-01	4.6E-04	4.1E-02	4.1E-02	4.9E+01	3.9E-04	2.0E-03	4.9E+01	1.9E-03	2.8E-04	1.2E-04	8.5E-05	7.7E-04	1.2E-05	3.5E-04	2.3E-04	2.8E-05	2.5E-05	5.0E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	9.5E-03	5.7E-02	7.3E-02	7.1E-05	7.6E-03	7.6E-03	7.6E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.6E-05	4.3E-06	3.9E-06	7.8E-06
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	3	2	0.21	Low LF	720	0.48	1.1E-02	8.6E-02	7.1E-02	1.1E-04	1.6E-02	1.6E-02	1.1E+01	9.2E-05	4.6E-04	1.1E+01	4.5E-04	6.5E-05	2.8E-05	2.0E-05	1.8E-04	2.7E-06	8.2E-05	5.3E-05	6.4E-06	5.9E-06	1.2E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	6	2	0.43	Average LF	720	0.41	1.9E-02	3.2E-01	1.1E-01	3.7E-04	3.4E-02	3.4E-02	4.0E+01	3.2E-04	1.6E-03	4.0E+01	1.6E-03	2.3E-04	9.9E-05	6.9E-05	6.3E-04	9.5E-06	2.9E-04	1.9E-04	2.2E-05	2.1E-05	4.1E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	6	2	0.43	Average LF	720	0.37	9.3E-02	1.1E+00	2.5E-01	1.3E-03	7.1E-02	7.1E-02	1.4E+02	1.1E-03	5.7E-03	1.4E+02	5.6E-03	8.0E-04	3.5E-04	2.5E-04	2.2E-03	3.4E-05	1.0E-03	6.6E-04	8.0E-05	7.3E-05	1.4E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	2	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.4E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	2.6E-03	3.7E-04	1.6E-04	1.1E-04	1.0E-03	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	1.2E-01	1.4E+00	3.3E-01	1.7E-03	9.2E-02	9.2E-02	1.8E+02	1.5E-03	7.4E-03	1.8E+02	7.3E-03	1.1E-03	4.6E-04	3.2E-04	2.9E-03	4.4E-05	1.3E-03	8.6E-04	1.0E-04	9.6E-05	1.9E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions (tons/month) [e]																	
										VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase I(b) - Gravel Farming/Compaction																											
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	6.2E-02	1.6E+00	3.3E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.7E-03	1.9E+02	7.5E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.9E-04	1.1E-04	9.8E-05	1.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	1.1E-01	1.4E+00	2.9E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	4	2	0.43	Average LF	720	0.37	1.1E-01	1.4E+00	2.9E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	6	2	0.43	Average LF	720	0.37	1.3E-01	1.7E+00	3.4E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	3.6E-02	4.2E-01	9.8E-02	5.1E-04	2.7E-02	2.7E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.4E-05	8.5E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	24	2	0.59	High LF	720	0.37	1.4E+00	3.0E+01	1.7E+01	3.9E-02	1.8E+00	1.8E+00	4.1E+03	3.3E-02	1.7E-01	4.1E+03	1.6E-01	2.3E-02	1.0E-02	7.1E-03	6.5E-02	9.8E-04	3.0E-02	1.9E-02	2.3E-03	2.1E-03	4.2E-03
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	6	2	0.59	High LF	720	0.37	3.0E-01	6.9E+00	2.4E+00	8.4E-03	4.0E-01	4.0E-01	8.9E+02	7.2E-03	3.6E-02	8.9E+02	3.5E-02	5.1E-03	2.2E-03	1.6E-03	1.4E-02	2.1E-04	6.4E-03	4.2E-03	5.1E-04	4.6E-04	9.2E-04
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	8.0E-02	1.8E+00	6.3E-01	2.2E-03	1.1E-01	1.1E-01	2.4E+02	1.9E-03	9.6E-03	2.4E+02	9.4E-03	1.4E-03	5.9E-04	4.1E-04	3.7E-03	5.7E-05	1.7E-03	1.1E-03	1.3E-04	1.2E-04	2.4E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	4	2	0.59	High LF	720	0.37	2.0E-01	4.4E+00	2.5E+00	5.7E-03	2.7E-01	2.7E-01	6.0E+02	4.9E-03	2.4E-02	6.0E+02	2.4E-02	3.4E-03	1.5E-03	1.0E-03	9.5E-03	1.4E-04	4.3E-03	2.8E-03	3.4E-04	3.1E-04	6.2E-04
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	3	2	0.59	High LF	720	0.37	9.4E-02	2.2E+00	7.4E-01	2.6E-03	1.2E-01	1.2E-01	2.8E+02	2.2E-03	1.1E-02	2.8E+02	1.1E-02	1.6E-03	6.9E-04	4.8E-04	4.4E-03	6.6E-05	2.0E-03	1.3E-03	1.6E-04	1.4E-04	2.9E-04
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.8E-01	4.0E+00	1.4E+00	4.9E-03	2.3E-01	2.3E-01	5.2E+02	4.2E-03	2.1E-02	5.2E+02	2.1E-02	3.0E-03	1.3E-03	9.1E-04	8.2E-03	1.2E-04	3.8E-03	2.4E-03	2.9E-04	2.7E-04	5.3E-04
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	1	2	0.59	High LF	720	0.37	6.5E-02	1.4E+00	4.6E-01	1.8E-03	8.6E-02	8.6E-02	1.9E+02	1.6E-03	7.8E-03	1.9E+02	7.6E-03	1.1E-03	4.8E-04	3.4E-04	3.0E-03	4.6E-05	1.4E-03	9.0E-04	1.1E-04	1.0E-04	2.0E-04
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	6.0E-02	6.8E-01	2.2E-01	9.0E-04	4.2E-02	4.2E-02	9.5E+01	7.7E-04	3.8E-03	9.5E+01	3.8E-03	5.4E-04	2.4E-04	1.7E-04	1.5E-03	2.3E-05	6.9E-04	4.5E-04	5.4E-05	4.9E-05	9.8E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	6	2	0.59	High LF	720	0.37	2.5E-01	2.9E+00	9.4E-01	3.8E-03	1.8E-01	1.8E-01	4.0E+02	3.2E-03	1.6E-02	4.0E+02	1.6E-02	2.3E-03	1.0E-03	7.0E-04	6.3E-03	9.5E-05	2.9E-03	1.9E-03	2.3E-04	2.1E-04	4.1E-04
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.1E-01	2.4E+00	8.3E-01	2.9E-03	1.4E-01	1.4E-01	3.1E+02	2.5E-03	1.3E-02	3.1E+02	1.2E-02	1.8E-03	7.8E-04	5.4E-04	4.9E-03	7.5E-05	2.3E-03	1.5E-03	1.8E-04	1.6E-04	3.2E-04
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	6	2	0.21	Low LF	720	0.48	8.2E-02	4.9E-01	6.3E-01	6.1E-04	6.5E-02	6.5E-02	6.5E+01	5.3E-04	2.6E-03	6.5E+01	2.6E-03	3.7E-04	1.6E-04	1.1E-04	1.0E-03	1.6E-05	4.7E-04	3.1E-04	3.7E-05	3.4E-05	6.7E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	1	2	0.59	High LF	720	0.37	2.1E-02	2.2E-01	8.2E-02	2.8E-04	1.8E-02	1.8E-02	3.0E+01	2.4E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.5E-05	5.2E-05	4.7E-04	7.2E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	3.8E-02	4.5E-01	1.0E-01	5.4E-04	2.9E-02	2.9E-02	5.7E+01	4.7E-04	2.3E-03	5.8E+01	2.3E-03	3.3E-04	1.4E-04	1.0E-04	9.1E-04	1.4E-05	4.2E-04	2.7E-04	3.3E-05	3.0E-05	5.9E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	5.1E-02	5.4E-01	2.0E-01	7.0E-04	4.5E-02	4.5E-02	7.4E+01	6.0E-04	3.0E-03	7.4E+01	2.9E-03	4.2E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.3E-04	3.5E-04	4.2E-05	3.8E-05	7.6E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	3.7E-02	4.2E-01	3.7E-01	5.2E-04	4.1E-02	4.1E-02	5.5E+01	4.5E-04	2.2E-03	5.6E+01	2.2E-03	3.2E-04	1.4E-04	9.7E-05	8.8E-04	1.3E-05	4.0E-04	2.6E-04	3.1E-05	2.9E-05	5.7E-05
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	8	2	0.59	High LF	720	0.37	3.6E-01	4.1E+00	1.3E+00	5.4E-03	2.6E-01	2.6E-01	5.7E+02	4.6E-03	2.3E-02	5.7E+02	2.3E-02	3.3E-03	1.4E-03	1.0E-03	9.0E-03	1.4E-04	4.1E-03	2.7E-03	3.2E-04	3.0E-04	5.9E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.8E-01	2.1E+00	6.7E-01	2.7E-03	1.3E-01	1.3E-01	2.9E+02	2.3E-03	1.2E-02	2.9E+02	1.1E-02	1.6E-03	7.2E-04	5.0E-04	4.5E-03	6.8E-05	2.1E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	3.3E-02	4.0E-01	9.1E-02	4.8E-04	2.5E-02	2.5E-02	5.0E+01	4.1E-04	2.0E-03	5.1E+01	2.0E-03	2.9E-04	1.3E-04	8.8E-05	8.0E-04	1.2E-05	3.6E-04	2.4E-04	2.9E-05	2.6E-05	5.2E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	6	2	0.43	Average LF	720	0.37	1.2E-01	1.5E+00	3.4E-01	1.8E-03	9.4E-02	9.4E-02	1.9E+02	1.5E-03	7.6E-03	1.9E+02	7.4E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.8E-04	1.1E-04	9.7E-05	1.9E-04
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	6	2	0.43	Average LF	720	0.37	1.4E-01	3.4E+00	7.3E-01	3.9E-03	1.5E-01	1.5E-01	4.2E+02	3.4E-03	1.7E-02	4.2E+02	1.6E-02	2.4E-03	1.0E-03	7.3E-04	6.6E-03	1.0E-04	3.0E-03	2.0E-03	2.4E-04	2.2E-04	4.3E-04
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	7.3E-02	5.6E-01	5.8E-01	7.1E-04	9.5E-02	9.5E-02	7.6E+01	6.1E-04	3.1E-03	7.6E+01	3.0E-03	4.3E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.5E-04	3.6E-04	4.3E-05	3.9E-05	7.8E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	2.4E-02	4.0E-01	1.4E-01	4.6E-04	4.1E-02	4.1E-02	4.9E+01	3.9E-04	2.0E-03	4.9E+01	1.9E-03	2.8E-04	1.2E-04	8.5E-05	7.7E-04	1.2E-05	3.5E-04	2.3E-04	2.8E-05	2.5E-05	5.0E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	9.5E-03	5.7E-02	7.3E-02	7.1E-05	7.6E-03	7.6E-03	7.6E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.6E-05	4.3E-06	3.9E-06	7.8E-06
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	3	2	0.21	Low LF	720	0.48	1.1E-02	8.6E-02	7.1E-02	1.1E-04	1.6E-02	1.6E-02	1.1E+01	9.2E-05	4.6E-04	1.1E+01	4.5E-04	6.5E-05	2.8E-05	2.0E-05	1.8E-04	2.7E-06	8.2E-05	5.3E-05	6.4E-06	5.9E-06	1.2E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	6	2	0.43	Average LF	720	0.41	1.9E-02	3.2E-01	1.1E-01	3.7E-04	3.4E-02	3.4E-02	4.0E+01	3.2E-04	1.6E-03	4.0E+01	1.6E-03	2.3E-04	9.9E-05	6.9E-05	6.3E-04	9.5E-06	2.9E-04	1.9E-04	2.2E-05	2.1E-05	4.1E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	6	2	0.43	Average LF	720	0.37	9.3E-02	1.1E+00	2.5E-01	1.3E-03	7.1E-02	7.1E-02	1.4E+02	1.1E-03	5.7E-03	1.4E+02	5.6E-03	8.0E-04	3.5E-04	2.5E-04	2.2E-03	3.4E-05	1.0E-03	6.6E-04	8.0E-05	7.3E-05	1.4E-04
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	2	2	0.43	Average LF	720	0.37	3.9E-02	4.9E-01	1.0E-01	6.1E-04	2.4E-02	2.4E-02	6.5E+01	5.2E-04	2.6E-03	6.5E+01	2.6E-03	3.7E-04	1.6E-04	1.1E-04	1.0E-03	1.6E-05	4.7E-04	3.0E-04	3.7E-05	3.4E-05	6.7E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	1.2E-01	1.4E+00	3.3E-01	1.7E-03	9.2E-02	9.2E-02	1.8E+02	1.5E-03	7.4E-03	1.8E+02	7.3E-03	1.1E-03	4.6E-04	3.2E-04	2.9E-03	4.4E-05	1.3E-03	8.6E-04	1.0E-04	9.6E-05	1.9E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions (tons/month)[e]															
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase II - Interconnecting Pipelines and Hydrotesting																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	2	2	0.43	Average LF	720	0.37	4.7E-02	1.2E+00	2.5E-01	1.4E-03	5.3E-02	5.3E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.7E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.5E-05	1.0E-03	6.8E-04	8.2E-05	7.5E-05	1.5E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	6.2E-02	1.6E+00	3.3E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.7E-03	1.9E+02	7.5E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.9E-04	1.1E-04	9.8E-05	1.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	4	2	0.43	Average LF	720	0.37	7.2E-02	8.5E-01	2.0E-01	1.0E-03	5.4E-02	5.4E-02	1.1E+02	8.8E-04	4.4E-03	1.1E+02	4.3E-03	6.2E-04	2.7E-04	1.9E-04	1.7E-03	2.6E-05	7.8E-04	5.1E-04	6.1E-05	5.6E-05	1.1E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	4.4E-02	5.5E-01	1.1E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	2.9E-03	4.1E-04	1.8E-04	1.3E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	3	2	0.43	Average LF	720	0.37	8.2E-02	1.0E+00	2.1E-01	1.3E-03	5.0E-02	5.0E-02	1.4E+02	1.1E-03	5.5E-03	1.4E+02	5.3E-03	7.7E-04	3.4E-04	2.4E-04	2.1E-03	3.2E-05	9.8E-04	6.4E-04	7.7E-05	7.0E-05	1.4E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	1.8E-02	2.1E-01	4.9E-02	2.6E-04	1.4E-02	1.4E-02	2.7E+01	2.2E-04	1.1E-03	2.7E+01	1.1E-03	1.5E-04	6.8E-05	4.7E-05	4.3E-04	6.5E-06	2.0E-04	1.3E-04	1.5E-05	1.4E-05	2.8E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	8.0E-02	1.8E+00	6.3E-01	2.2E-03	1.1E-01	1.1E-01	2.4E+02	1.9E-03	9.6E-03	2.4E+02	9.4E-03	1.4E-03	5.9E-04	4.1E-04	3.7E-03	5.7E-05	1.7E-03	1.1E-03	1.3E-04	1.2E-04	2.4E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	7.2E-01	2.5E-01	8.7E-04	4.1E-02	4.1E-02	9.2E+01	7.5E-04	3.7E-03	9.3E+01	3.7E-03	5.3E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.7E-04	4.3E-04	5.2E-05	4.8E-05	9.5E-05
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	2	2	0.59	High LF	720	0.37	6.0E-02	6.8E-01	2.2E-01	9.0E-04	4.2E-02	4.2E-02	9.5E+01	7.7E-04	3.8E-03	9.5E+01	3.8E-03	5.4E-04	2.4E-04	1.7E-04	1.5E-03	2.3E-05	6.9E-04	4.5E-04	5.4E-05	4.9E-05	9.8E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.9E-02	2.3E-01	5.2E-02	2.7E-04	1.4E-02	1.4E-02	2.9E+01	2.3E-04	1.2E-03	2.9E+01	1.1E-03	1.6E-04	7.2E-05	5.0E-05	4.5E-04	6.9E-06	2.1E-04	1.4E-04	1.6E-05	1.5E-05	3.0E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	2	2	0.43	Average LF	720	0.37	6.0E-02	7.6E-01	1.5E-01	9.4E-04	3.6E-02	3.6E-02	9.9E+01	8.0E-04	4.0E-03	9.9E+01	3.9E-03	5.7E-04	2.5E-04	1.7E-04	1.6E-03	2.4E-05	7.2E-04	4.7E-04	5.6E-05	5.1E-05	1.0E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	2	2	0.59	High LF	720	0.37	5.1E-02	5.4E-01	2.0E-01	7.0E-04	4.5E-02	4.5E-02	7.4E+01	6.0E-04	3.0E-03	7.4E+01	2.9E-03	4.2E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.3E-04	3.5E-04	4.2E-05	3.8E-05	7.6E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	3.3E-02	4.0E-01	9.1E-02	4.8E-04	2.5E-02	2.5E-02	5.0E+01	4.1E-04	2.0E-03	5.1E+01	2.0E-03	2.9E-04	1.3E-04	8.8E-05	8.0E-04	1.2E-05	3.6E-04	2.4E-04	2.9E-05	2.6E-05	5.2E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	2.4E-02	1.9E-01	1.9E-01	2.4E-04	3.2E-02	3.2E-02	2.5E+01	2.0E-04	1.0E-03	2.5E+01	1.0E-03	1.4E-04	6.3E-05	4.4E-05	4.0E-04	6.0E-06	1.8E-04	1.2E-04	1.4E-05	1.3E-05	2.6E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	0	2	0.43	Average LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	9.5E-03	5.7E-02	7.3E-02	7.1E-05	7.6E-03	7.6E-03	7.6E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.6E-05	4.3E-06	3.9E-06	7.8E-06
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	7.2E-03	5.7E-02	4.7E-02	7.1E-05	1.1E-02	1.1E-02	7.5E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.5E-05	4.3E-06	3.9E-06	7.8E-06
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	2.0E-02	2.5E-01	5.0E-02	3.1E-04	1.2E-02	1.2E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	2	2	0.43	Average LF	720	0.37	4.1E-02	4.8E-01	1.1E-01	5.8E-04	3.1E-02	3.1E-02	6.1E+01	5.0E-04	2.5E-03	6.1E+01	2.4E-03	3.5E-04	1.5E-04	1.1E-04	9.7E-04	1.5E-05	4.4E-04	2.9E-04	3.5E-05	3.2E-05	6.3E-05

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions (tons/month)[e]														
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(a) - Install Permanent Camp and Office Piles																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	9.3E-02	2.4E+00	5.0E-01	2.7E-03	1.0E-01	1.0E-01	2.8E+02	2.3E-03	1.2E-02	2.8E+02	1.1E-02	1.6E-03	7.1E-04	5.0E-04	4.5E-03	6.8E-05	2.1E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	5	2	0.43	Average LF	720	0.37	9.0E-02	1.1E+00	2.4E-01	1.3E-03	6.8E-02	6.8E-02	1.4E+02	1.1E-03	5.5E-03	1.4E+02	5.3E-03	7.7E-04	3.4E-04	2.4E-04	2.1E-03	3.2E-05	9.8E-04	6.4E-04	7.7E-05	7.0E-05	1.4E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	4.4E-02	5.5E-01	1.1E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	2.9E-03	4.1E-04	1.8E-04	1.3E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	2	2	0.43	Average LF	720	0.37	5.4E-02	6.9E-01	1.4E-01	8.5E-04	3.3E-02	3.3E-02	9.0E+01	7.3E-04	3.7E-03	9.0E+01	3.6E-03	5.2E-04	2.3E-04	1.6E-04	1.4E-03	2.2E-05	6.5E-04	4.2E-04	5.1E-05	4.7E-05	9.3E-05
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	1.8E-02	2.1E-01	4.9E-02	2.6E-04	1.4E-02	1.4E-02	2.7E+01	2.2E-04	1.1E-03	2.7E+01	1.1E-03	1.5E-04	6.8E-05	4.7E-05	4.3E-04	6.5E-06	2.0E-04	1.3E-04	1.5E-05	1.4E-05	2.8E-05
Hydrovac	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	1.8E-02	2.1E-01	4.9E-02	2.6E-04	1.4E-02	1.4E-02	2.7E+01	2.2E-04	1.1E-03	2.7E+01	1.1E-03	1.5E-04	6.8E-05	4.7E-05	4.3E-04	6.5E-06	2.0E-04	1.3E-04	1.5E-05	1.4E-05	2.8E-05
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.9E-02	2.3E-01	5.2E-02	2.7E-04	1.4E-02	1.4E-02	2.9E+01	2.3E-04	1.2E-03	2.9E+01	1.1E-03	1.6E-04	7.2E-05	5.0E-05	4.5E-04	6.9E-06	2.1E-04	1.4E-04	1.6E-05	1.5E-05	3.0E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	2	2	0.43	Average LF	720	0.37	6.0E-02	7.6E-01	1.5E-01	9.4E-04	3.6E-02	3.6E-02	9.9E+01	8.0E-04	4.0E-03	9.9E+01	3.9E-03	5.7E-04	2.5E-04	1.7E-04	1.6E-03	2.4E-05	7.2E-04	4.7E-04	5.6E-05	5.1E-05	1.0E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.8E-02	4.5E-01	9.5E-02	5.1E-04	2.0E-02	2.0E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.5E-05	8.6E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	2	2	0.43	Average LF	720	0.37	3.3E-02	4.0E-01	9.1E-02	4.8E-04	2.5E-02	2.5E-02	5.0E+01	4.1E-04	2.0E-03	5.1E+01	2.0E-03	2.9E-04	1.3E-04	8.8E-05	8.0E-04	1.2E-05	3.6E-04	2.4E-04	2.9E-05	2.6E-05	5.2E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	2.4E-02	1.9E-01	1.9E-01	2.4E-04	3.2E-02	3.2E-02	2.5E+01	2.0E-04	1.0E-03	2.5E+01	1.0E-03	1.4E-04	6.3E-05	4.4E-05	4.0E-04	6.0E-06	1.8E-04	1.2E-04	1.4E-05	1.3E-05	2.6E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.3E-02	3.1E-04	2.8E-02	2.8E-02	3.2E+01	2.6E-04	1.3E-03	3.3E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	12	2	0.21	Low LF	720	0.48	4.3E-02	3.4E-01	2.8E-01	4.3E-04	6.4E-02	6.4E-02	4.5E+01	3.7E-04	1.8E-03	4.5E+01	1.8E-03	2.6E-04	1.1E-04	7.9E-05	7.2E-04	1.1E-05	3.3E-04	2.1E-04	2.6E-05	2.4E-05	4.7E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	2.0E-02	2.5E-01	5.0E-02	3.1E-04	1.2E-02	1.2E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	8.1E-02	9.6E-01	2.2E-01	1.2E-03	6.2E-02	6.2E-02	1.2E+02	9.9E-04	5.0E-03	1.2E+02	4.8E-03	7.0E-04	3.1E-04	2.1E-04	1.9E-03	2.9E-05	8.9E-04	5.8E-04	6.9E-05	6.4E-05	1.3E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions (tons/month)[e]														
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(b) - Install Permanent Camps, Offices, Shops, and Warehouse																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	9.3E-02	2.4E+00	5.0E-01	2.7E-03	1.0E-01	1.0E-01	2.8E+02	2.3E-03	1.2E-02	2.8E+02	1.1E-02	1.6E-03	7.1E-04	5.0E-04	4.5E-03	6.8E-05	2.1E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	1	2	0.43	Average LF	720	0.37	2.2E-02	2.8E-01	5.6E-02	3.4E-04	1.3E-02	1.3E-02	3.6E+01	2.9E-04	1.5E-03	3.6E+01	1.4E-03	2.1E-04	9.0E-05	6.3E-05	5.7E-04	8.6E-06	2.6E-04	1.7E-04	2.0E-05	1.9E-05	3.7E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	1.8E-02	2.1E-01	4.9E-02	2.6E-04	1.4E-02	1.4E-02	2.7E+01	2.2E-04	1.1E-03	2.7E+01	1.1E-03	1.5E-04	6.8E-05	4.7E-05	4.3E-04	6.5E-06	2.0E-04	1.3E-04	1.5E-05	1.4E-05	2.8E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	3.0E-02	3.8E-01	7.7E-02	4.7E-04	1.8E-02	1.8E-02	4.9E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.8E-04	1.2E-04	8.7E-05	7.8E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.8E-02	4.5E-01	9.5E-02	5.1E-04	2.0E-02	2.0E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.5E-05	8.6E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	2.9E-02	7.5E-01	1.6E-01	8.5E-04	3.3E-02	3.3E-02	9.0E+01	7.3E-04	3.7E-03	9.0E+01	3.6E-03	5.2E-04	2.3E-04	1.6E-04	1.4E-03	2.2E-05	6.5E-04	4.2E-04	5.1E-05	4.7E-05	9.3E-05
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	1	2	0.43	Average LF	720	0.37	1.7E-02	2.0E-01	4.6E-02	2.4E-04	1.3E-02	1.3E-02	2.5E+01	2.0E-04	1.0E-03	2.5E+01	1.0E-03	1.4E-04	6.3E-05	4.4E-05	4.0E-04	6.0E-06	1.8E-04	1.2E-04	1.4E-05	1.3E-05	2.6E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	12	2	0.43	Average LF	720	0.41	2.4E-02	1.9E-01	1.9E-01	2.4E-04	3.2E-02	3.2E-02	2.5E+01	2.0E-04	1.0E-03	2.5E+01	1.0E-03	1.4E-04	6.3E-05	4.4E-05	4.0E-04	6.0E-06	1.8E-04	1.2E-04	1.4E-05	1.3E-05	2.6E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.3E-02	3.1E-04	2.8E-02	2.8E-02	3.2E+01	2.6E-04	1.3E-03	3.3E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	3.8E-02	2.3E-01	2.9E-01	2.9E-04	3.1E-02	3.1E-02	3.0E+01	2.5E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.6E-05	5.3E-05	4.8E-04	7.3E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.5E-02	1.5E-01	1.9E-01	1.9E-04	2.0E-02	2.0E-02	2.0E+01	1.6E-04	8.2E-04	2.0E+01	8.0E-04	1.2E-04	5.0E-05	3.5E-05	3.2E-04	4.8E-06	1.5E-04	9.5E-05	1.1E-05	1.0E-05	2.1E-05
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	7.2E-03	5.7E-02	4.7E-02	7.1E-05	1.1E-02	1.1E-02	7.5E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.5E-05	4.3E-06	3.9E-06	7.8E-06
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	2.0E-02	2.5E-01	5.0E-02	3.1E-04	1.2E-02	1.2E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	4	2	0.43	Average LF	720	0.37	8.7E-02	2.2E+00	4.7E-01	2.5E-03	9.8E-02	9.8E-02	2.7E+02	2.2E-03	1.1E-02	2.7E+02	1.1E-02	1.5E-03	6.7E-04	4.7E-04	4.2E-03	6.4E-05	1.9E-03	1.3E-03	1.5E-04	1.4E-04	2.7E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	8.1E-02	9.6E-01	2.2E-01	1.2E-03	6.2E-02	6.2E-02	1.2E+02	9.9E-04	5.0E-03	1.2E+02	4.8E-03	7.0E-04	3.1E-04	2.1E-04	1.9E-03	2.9E-05	8.9E-04	5.8E-04	6.9E-05	6.4E-05	1.3E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions (tons/month)[e]																		
										VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase IV(c) - Install Temporary Construction Camp																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	3	2	0.43	Average LF	720	0.37	9.3E-02	2.4E+00	5.0E-01	2.7E-03	1.0E-01	1.0E-01	2.8E+02	2.3E-03	1.2E-02	2.8E+02	1.1E-02	1.6E-03	7.1E-04	5.0E-04	4.5E-03	6.8E-05	2.1E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Welding Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	1	2	0.43	Average LF	720	0.37	2.2E-02	2.8E-01	5.6E-02	3.4E-04	1.3E-02	1.3E-02	3.6E+01	2.9E-04	1.5E-03	3.6E+01	1.4E-03	2.1E-04	9.0E-05	6.3E-05	5.7E-04	8.6E-06	2.6E-04	1.7E-04	2.0E-05	1.9E-05	3.7E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	1	2	0.43	Average LF	720	0.37	1.8E-02	2.1E-01	4.9E-02	2.6E-04	1.4E-02	1.4E-02	2.7E+01	2.2E-04	1.1E-03	2.7E+01	1.1E-03	1.5E-04	6.8E-05	4.7E-05	4.3E-04	6.5E-06	2.0E-04	1.3E-04	1.5E-05	1.4E-05	2.8E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	3.0E-02	3.8E-01	7.7E-02	4.7E-04	1.8E-02	1.8E-02	4.9E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.8E-04	1.2E-04	8.7E-05	7.8E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.8E-02	4.5E-01	9.5E-02	5.1E-04	2.0E-02	2.0E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.5E-05	8.6E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	2.9E-02	7.5E-01	1.6E-01	8.5E-04	3.3E-02	3.3E-02	9.0E+01	7.3E-04	3.7E-03	9.0E+01	3.6E-03	5.2E-04	2.3E-04	1.6E-04	1.4E-03	2.2E-05	6.5E-04	4.2E-04	5.1E-05	4.7E-05	9.3E-05
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	1	2	0.43	Average LF	720	0.37	1.7E-02	2.0E-01	4.6E-02	2.4E-04	1.3E-02	1.3E-02	2.5E+01	2.0E-04	1.0E-03	2.5E+01	1.0E-03	1.4E-04	6.3E-05	4.4E-05	4.0E-04	6.0E-06	1.8E-04	1.2E-04	1.4E-05	1.3E-05	2.6E-05
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	18	2	0.43	Average LF	720	0.41	3.7E-02	2.8E-01	2.9E-01	3.6E-04	4.8E-02	4.8E-02	3.8E+01	3.1E-04	1.5E-03	3.8E+01	1.5E-03	2.2E-04	9.5E-05	6.6E-05	6.0E-04	9.1E-06	2.7E-04	1.8E-04	2.1E-05	2.0E-05	3.9E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.3E-02	3.1E-04	2.8E-02	2.8E-02	3.2E+01	2.6E-04	1.3E-03	3.3E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	3.8E-02	2.3E-01	2.9E-01	2.9E-04	3.1E-02	3.1E-02	3.0E+01	2.5E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.6E-05	5.3E-05	4.8E-04	7.3E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.5E-02	1.5E-01	1.9E-01	1.9E-04	2.0E-02	2.0E-02	2.0E+01	1.6E-04	8.2E-04	2.0E+01	8.0E-04	1.2E-04	5.0E-05	3.5E-05	3.2E-04	4.8E-06	1.5E-04	9.5E-05	1.1E-05	1.0E-05	2.1E-05
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	2	2	0.21	Low LF	720	0.48	7.2E-03	5.7E-02	4.7E-02	7.1E-05	1.1E-02	1.1E-02	7.5E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.5E-05	4.3E-06	3.9E-06	7.8E-06
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	2.0E-02	2.5E-01	5.0E-02	3.1E-04	1.2E-02	1.2E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	4	2	0.43	Average LF	720	0.37	8.7E-02	2.2E+00	4.7E-01	2.5E-03	9.8E-02	9.8E-02	2.7E+02	2.2E-03	1.1E-02	2.7E+02	1.1E-02	1.5E-03	6.7E-04	4.7E-04	4.2E-03	6.4E-05	1.9E-03	1.3E-03	1.5E-04	1.4E-04	2.7E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	8.1E-02	9.6E-01	2.2E-01	1.2E-03	6.2E-02	6.2E-02	1.2E+02	9.9E-04	5.0E-03	1.2E+02	4.8E-03	7.0E-04	3.1E-04	2.1E-04	1.9E-03	2.9E-05	8.9E-04	5.8E-04	6.9E-05	6.4E-05	1.3E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions (tons/month)[e]																		
										VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e[f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase V - Install GCF Module Support Piles																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	3	2	0.43	Average LF	720	0.37	7.1E-02	1.8E+00	3.8E-01	2.0E-03	7.9E-02	7.9E-02	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	4	2	0.43	Average LF	720	0.37	1.2E-01	3.1E+00	6.6E-01	3.6E-03	1.4E-01	1.4E-01	3.8E+02	3.1E-03	1.5E-02	3.8E+02	1.5E-02	2.2E-03	9.5E-04	6.6E-04	6.0E-03	9.1E-05	2.7E-03	1.8E-03	2.1E-04	2.0E-04	3.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	8	2	0.43	Average LF	720	0.37	1.4E-01	1.7E+00	3.9E-01	2.0E-03	1.1E-01	1.1E-01	2.2E+02	1.8E-03	8.8E-03	2.2E+02	8.6E-03	1.2E-03	5.4E-04	3.8E-04	3.4E-03	5.2E-05	1.6E-03	1.0E-03	1.2E-04	1.1E-04	2.2E-04
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	3	2	0.43	Average LF	720	0.37	8.5E-02	1.1E+00	2.2E-01	1.3E-03	5.2E-02	5.2E-02	1.4E+02	1.1E-03	5.7E-03	1.4E+02	5.6E-03	8.0E-04	3.5E-04	2.5E-04	2.2E-03	3.4E-05	1.0E-03	6.6E-04	8.0E-05	7.3E-05	1.4E-04
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	4	2	0.43	Average LF	720	0.37	8.7E-02	1.1E+00	2.2E-01	1.4E-03	5.3E-02	5.3E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.7E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.5E-05	1.0E-03	6.8E-04	8.2E-05	7.5E-05	1.5E-04
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	6	2	0.43	Average LF	720	0.37	1.6E-01	2.1E+00	4.2E-01	2.6E-03	9.9E-02	9.9E-02	2.7E+02	2.2E-03	1.1E-02	2.7E+02	1.1E-02	1.5E-03	6.8E-04	4.7E-04	4.3E-03	6.5E-05	2.0E-03	1.3E-03	1.5E-04	1.4E-04	2.8E-04
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	3.6E-02	4.2E-01	9.8E-02	5.1E-04	2.7E-02	2.7E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.4E-05	8.5E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	4	2	0.59	High LF	720	0.37	1.6E-01	3.7E+00	1.3E+00	4.5E-03	2.1E-01	2.1E-01	4.7E+02	3.8E-03	1.9E-02	4.7E+02	1.9E-02	2.7E-03	1.2E-03	8.3E-04	7.5E-03	1.1E-04	3.4E-03	2.2E-03	2.7E-04	2.5E-04	4.9E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	2	2	0.43	Average LF	720	0.37	3.8E-02	4.5E-01	1.0E-01	5.4E-04	2.9E-02	2.9E-02	5.7E+01	4.7E-04	2.3E-03	5.8E+01	2.3E-03	3.3E-04	1.4E-04	1.0E-04	9.1E-04	1.4E-05	4.2E-04	2.7E-04	3.3E-05	3.0E-05	5.9E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	4	2	0.43	Average LF	720	0.37	1.2E-01	1.5E+00	3.1E-01	1.9E-03	7.3E-02	7.3E-02	2.0E+02	1.6E-03	8.0E-03	2.0E+02	7.8E-03	1.1E-03	5.0E-04	3.5E-04	3.1E-03	4.7E-05	1.4E-03	9.3E-04	1.1E-04	1.0E-04	2.0E-04
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	3	2	0.59	High LF	720	0.41	5.6E-02	6.3E-01	5.6E-01	7.9E-04	6.1E-02	6.1E-02	8.3E+01	6.7E-04	3.4E-03	8.3E+01	3.3E-03	4.8E-04	2.1E-04	1.5E-04	1.3E-03	2.0E-05	6.0E-04	3.9E-04	4.7E-05	4.3E-05	8.6E-05
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	1	2	0.43	Average LF	720	0.41	3.9E-03	6.5E-02	2.3E-02	7.6E-05	6.8E-03	6.8E-03	8.0E+00	6.5E-05	3.2E-04	8.0E+00	3.2E-04	4.6E-05	2.0E-05	1.4E-05	1.3E-04	1.9E-06	5.8E-05	3.8E-05	4.5E-06	4.2E-06	8.2E-06
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	24	2	0.43	Average LF	720	0.41	4.9E-02	3.7E-01	3.9E-01	4.8E-04	6.3E-02	6.3E-02	5.0E+01	4.1E-04	2.0E-03	5.1E+01	2.0E-03	2.9E-04	1.3E-04	8.8E-05	8.0E-04	1.2E-05	3.7E-04	2.4E-04	2.9E-05	2.6E-05	5.2E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.3E-02	3.1E-04	2.8E-02	2.8E-02	3.2E+01	2.6E-04	1.3E-03	3.3E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	1	2	0.21	Low LF	720	0.48	9.5E-03	5.7E-02	7.3E-02	7.1E-05	7.6E-03	7.6E-03	7.6E+00	6.1E-05	3.1E-04	7.6E+00	3.0E-04	4.3E-05	1.9E-05	1.3E-05	1.2E-04	1.8E-06	5.5E-05	3.6E-05	4.3E-06	3.9E-06	7.8E-06
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	0	2	0.21	Low LF	720	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	8	2	0.21	Low LF	720	0.48	2.9E-02	2.3E-01	1.9E-01	2.8E-04	4.3E-02	4.3E-02	3.0E+01	2.4E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.6E-05	5.3E-05	4.8E-04	7.2E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	1	2	0.43	Average LF	720	0.37	2.0E-02	2.5E-01	5.0E-02	3.1E-04	1.2E-02	1.2E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.9E-04	8.1E-05	5.7E-05	5.1E-04	7.8E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	2	2	0.43	Average LF	720	0.37	4.4E-02	1.1E+00	2.3E-01	1.3E-03	4.9E-02	4.9E-02	1.3E+02	1.1E-03	5.4E-03	1.3E+02	5.3E-03	7.6E-04	3.3E-04	2.3E-04	2.1E-03	3.2E-05	9.6E-04	6.3E-04	7.6E-05	6.9E-05	1.4E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	4	2	0.43	Average LF	720	0.37	8.1E-02	9.6E-01	2.2E-01	1.2E-03	6.2E-02	6.2E-02	1.2E+02	9.9E-04	5.0E-03	1.2E+02	4.8E-03	7.0E-04	3.1E-04	2.1E-04	1.9E-03	2.9E-05	8.9E-04	5.8E-04	6.9E-05	6.4E-05	1.3E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	Emissions (tons/month) [e]																		
										VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
Phase VI - Install GCF Modules																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	6	2	0.43	Average LF	720	0.37	1.4E-01	3.6E+00	7.6E-01	4.1E-03	1.6E-01	1.6E-01	4.3E+02	3.5E-03	1.8E-02	4.3E+02	1.7E-02	2.5E-03	1.1E-03	7.6E-04	6.8E-03	1.0E-04	3.1E-03	2.0E-03	2.5E-04	2.2E-04	4.5E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	6	2	0.43	Average LF	720	0.37	1.9E-01	4.7E+00	1.0E+00	5.4E-03	2.1E-01	2.1E-01	5.7E+02	4.6E-03	2.3E-02	5.7E+02	2.2E-02	3.2E-03	1.4E-03	9.9E-04	9.0E-03	1.4E-04	4.1E-03	2.7E-03	3.2E-04	2.9E-04	5.8E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Welding Truck	Tractors/Trailers	260	Estimate	6	2	0.43	Average LF	720	0.37	1.7E-01	2.1E+00	4.4E-01	2.7E-03	1.0E-01	1.0E-01	2.8E+02	2.3E-03	1.1E-02	2.8E+02	1.1E-02	1.6E-03	7.0E-04	4.9E-04	4.4E-03	6.7E-05	2.0E-03	1.3E-03	1.6E-04	1.5E-04	2.9E-04
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	4.4E-02	5.5E-01	1.1E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	2.9E-03	4.1E-04	1.8E-04	1.3E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	3.6E-02	4.2E-01	9.8E-02	5.1E-04	2.7E-02	2.7E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.4E-05	8.5E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	2	2	0.59	High LF	720	0.37	8.0E-02	1.8E+00	6.3E-01	2.2E-03	1.1E-01	1.1E-01	2.4E+02	1.9E-03	9.6E-03	2.4E+02	9.4E-03	1.4E-03	5.9E-04	4.1E-04	3.7E-03	5.7E-05	1.7E-03	1.1E-03	1.3E-04	1.2E-04	2.4E-04
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.6E-02	6.1E-01	2.1E-01	7.4E-04	3.5E-02	3.5E-02	7.8E+01	6.3E-04	3.2E-03	7.8E+01	3.1E-03	4.5E-04	2.0E-04	1.4E-04	1.2E-03	1.9E-05	5.6E-04	3.7E-04	4.4E-05	4.0E-05	8.0E-05
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	3	2	0.43	Average LF	720	0.37	5.7E-02	6.8E-01	1.6E-01	8.1E-04	4.3E-02	4.3E-02	8.6E+01	7.0E-04	3.5E-03	8.7E+01	3.4E-03	4.9E-04	2.2E-04	1.5E-04	1.4E-03	2.1E-05	6.2E-04	4.1E-04	4.9E-05	4.5E-05	8.9E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	3.0E-02	3.8E-01	7.7E-02	4.7E-04	1.8E-02	1.8E-02	4.9E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.8E-04	1.2E-04	8.7E-05	7.8E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	2.9E-02	7.5E-01	1.6E-01	8.5E-04	3.3E-02	3.3E-02	9.0E+01	7.3E-04	3.7E-03	9.0E+01	3.6E-03	5.2E-04	2.3E-04	1.6E-04	1.4E-03	2.2E-05	6.5E-04	4.2E-04	5.1E-05	4.7E-05	9.3E-05
M16000 Lattice	Cranes	500	Manitowoc	1	2	0.43	Average LF	720	0.37	2.9E-02	7.5E-01	1.6E-01	8.5E-04	3.3E-02	3.3E-02	9.0E+01	7.3E-04	3.7E-03	9.0E+01	3.6E-03	5.2E-04	2.3E-04	1.6E-04	1.4E-03	2.2E-05	6.5E-04	4.2E-04	5.1E-05	4.7E-05	9.3E-05
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	6	2	0.59	High LF	720	0.41	1.1E-01	1.3E+00	1.1E+00	1.6E-03	1.2E-01	1.2E-01	1.7E+02	1.3E-03	6.7E-03	1.7E+02	6.6E-03	9.5E-04	4.2E-04	2.9E-04	2.6E-03	4.0E-05	1.2E-03	7.8E-04	9.4E-05	8.6E-05	1.7E-04
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.2E-02	3.0E-04	2.7E-02	2.7E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.8E-04	8.0E-05	5.6E-05	5.1E-04	7.7E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	6	2	0.43	Average LF	720	0.37	1.0E-01	1.2E+00	2.7E-01	1.4E-03	7.6E-02	7.6E-02	1.5E+02	1.2E-03	6.1E-03	1.5E+02	6.0E-03	8.7E-04	3.8E-04	2.6E-04	2.4E-03	3.6E-05	1.1E-03	7.1E-04	8.6E-05	7.9E-05	1.6E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	2	2	0.43	Average LF	720	0.37	4.1E-02	4.9E-01	1.1E-01	5.9E-04	3.1E-02	3.1E-02	6.2E+01	5.1E-04	2.5E-03	6.3E+01	2.5E-03	3.6E-04	1.6E-04	1.1E-04	9.9E-04	1.5E-05	4.5E-04	2.9E-04	3.5E-05	3.2E-05	6.4E-05
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	36	2	0.43	Average LF	720	0.41	7.3E-02	5.6E-01	5.8E-01	7.1E-04	9.5E-02	9.5E-02	7.6E+01	6.1E-04	3.1E-03	7.6E+01	3.0E-03	4.3E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.5E-04	3.6E-04	4.3E-05	3.9E-05	7.8E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	6	2	0.43	Average LF	720	0.41	2.4E-02	4.0E-01	1.4E-01	4.6E-04	4.1E-02	4.1E-02	4.9E+01	3.9E-04	2.0E-03	4.9E+01	1.9E-03	2.8E-04	1.2E-04	8.5E-05	7.7E-04	1.2E-05	3.5E-04	2.3E-04	2.8E-05	2.5E-05	5.0E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	6	2	0.21	Low LF	720	0.48	5.7E-02	3.4E-01	4.4E-01	4.3E-04	4.6E-02	4.6E-02	4.5E+01	3.7E-04	1.8E-03	4.6E+01	1.8E-03	2.6E-04	1.1E-04	7.9E-05	7.2E-04	1.1E-05	3.3E-04	2.1E-04	2.6E-05	2.4E-05	4.7E-05
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	4	2	0.21	Low LF	720	0.48	5.1E-02	3.0E-01	3.9E-01	3.8E-04	4.0E-02	4.0E-02	4.0E+01	3.3E-04	1.6E-03	4.0E+01	1.6E-03	2.3E-04	1.0E-04	7.0E-05	6.4E-04	9.6E-06	2.9E-04	1.9E-04	2.3E-05	2.1E-05	4.1E-05
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	20	2	0.21	Low LF	720	0.48	7.2E-02	5.7E-01	4.7E-01	7.1E-04	1.1E-01	1.1E-01	7.5E+01	6.1E-04	3.1E-03	7.6E+01	3.0E-03	4.3E-04	1.9E-04	1.3E-04	1.2E-03	1.8E-05	5.5E-04	3.5E-04	4.3E-05	3.9E-05	7.8E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	3	2	0.43	Average LF	720	0.41	9.7E-03	1.6E-01	5.7E-02	1.9E-04	1.7E-02	1.7E-02	2.0E+01	1.6E-04	8.0E-04	2.0E+01	7.8E-04	1.1E-04	5.0E-05	3.5E-05	3.1E-04	4.8E-06	1.4E-04	9.3E-05	1.1E-05	1.0E-05	2.0E-05
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	2	2	0.43	Average LF	720	0.37	3.1E-02	3.7E-01	8.5E-02	4.4E-04	2.4E-02	2.4E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	6	2	0.43	Average LF	720	0.37	1.2E-01	1.5E+00	3.0E-01	1.8E-03	7.1E-02	7.1E-02	1.9E+02	1.6E-03	7.9E-03	1.9E+02	7.7E-03	1.1E-03	4.9E-04	3.4E-04	3.1E-03	4.7E-05	1.4E-03	9.1E-04	1.1E-04	1.0E-04	2.0E-04
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	8	2	0.43	Average LF	720	0.37	1.7E-01	4.4E+00	9.4E-01	5.0E-03	2.0E-01	2.0E-01	5.3E+02	4.3E-03	2.2E-02	5.3E+02	2.1E-02	3.0E-03	1.3E-03	9.3E-04	8.4E-03	1.3E-04	3.9E-03	2.5E-03	3.0E-04	2.8E-04	5.5E-04
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	6	2	0.43	Average LF	720	0.37	1.2E-01	1.4E+00	3.3E-01	1.7E-03	9.2E-02	9.2E-02	1.8E+02	1.5E-03	7.4E-03	1.8E+02	7.3E-03	1.1E-03	4.6E-04	3.2E-04	2.9E-03	4.4E-05	1.3E-03	8.6E-04	1.0E-04	9.6E-05	1.9E-04

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AGDC: Alaska Stand Alone Pipeline (ASAP) Project

GCF Construction

NonRoad Equipment: Emissions Calculations

										Emissions (tons/month)[e]															
Equipment [a]	Category	bhp	bhp Source	Quantity	Tier Level	Load Factor [b]	Transient Adjustment Factor	Operating Hours/ Month [c]	Fuel Consumption (lb/hp-hr)	VOC	Nox	CO	SO2	PM10	PM2.5	CO2	N2O	CH4	CO2e [f]	Total HAPs	Benzene	Toluene	Xylenes	Propylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene	Total PAH
FCO																														
1 T. Flatbed	Tractors/Trailers	400	Estimate	2	2	0.43	Average LF	720	0.37	4.7E-02	1.2E+00	2.5E-01	1.4E-03	5.3E-02	5.3E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.7E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.5E-05	1.0E-03	6.8E-04	8.2E-05	7.5E-05	1.5E-04
40,000#Tractor, Truck Medium Duty	Tractors/Trailers	525	Estimate	2	2	0.43	Average LF	720	0.37	6.2E-02	1.6E+00	3.3E-01	1.8E-03	6.9E-02	6.9E-02	1.9E+02	1.5E-03	7.7E-03	1.9E+02	7.5E-03	1.1E-03	4.7E-04	3.3E-04	3.0E-03	4.5E-05	1.4E-03	8.9E-04	1.1E-04	9.8E-05	1.9E-04
Watson Drill (2100)	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice Tractor - Drill/Pump	Tractors/Trailers	200	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lube Truck	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Fuel Truck 2500-4000 gallon	Tractors/Trailers	260	Estimate	1	2	0.43	Average LF	720	0.37	2.8E-02	3.6E-01	7.3E-02	4.4E-04	1.7E-02	1.7E-02	4.7E+01	3.8E-04	1.9E-03	4.7E+01	1.9E-03	2.7E-04	1.2E-04	8.2E-05	7.4E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.4E-05	4.8E-05
Welding Truck	Tractors/Trailers	260	Estimate	2	2	0.43	Average LF	720	0.37	5.7E-02	7.2E-01	1.5E-01	8.8E-04	3.4E-02	3.4E-02	9.4E+01	7.6E-04	3.8E-03	9.4E+01	3.7E-03	5.4E-04	2.3E-04	1.6E-04	1.5E-03	2.2E-05	6.8E-04	4.4E-04	5.3E-05	4.9E-05	9.6E-05
Water Truck 2500 gallon	Tractors/Trailers	200	Estimate	2	2	0.43	Average LF	720	0.37	4.4E-02	5.5E-01	1.1E-01	6.8E-04	2.6E-02	2.6E-02	7.2E+01	5.8E-04	2.9E-03	7.2E+01	2.9E-03	4.1E-04	1.8E-04	1.3E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.1E-05	3.7E-05	7.4E-05
Concrete/Slurry Mixer	Tractors/Trailers	250	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacuum Septic Service Truck 2500 gallon	Tractors/Trailers	150	Estimate	2	2	0.43	Average LF	720	0.37	3.6E-02	4.2E-01	9.8E-02	5.1E-04	2.7E-02	2.7E-02	5.4E+01	4.4E-04	2.2E-03	5.4E+01	2.1E-03	3.1E-04	1.4E-04	9.4E-05	8.5E-04	1.3E-05	3.9E-04	2.5E-04	3.1E-05	2.8E-05	5.6E-05
Hydrovac	Tractors/Trailers	150	Estimate	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY B70 (Caterpillar 773 puller)	Gravel Haul Equipment	683	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40 CY Maxi Haul (Kenworth C500/Cat C15 Puller)	Gravel Haul Equipment	595	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 CY Articulate End Dump (Caterpillar 769)	Gravel Haul Equipment	474	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 CY Articulate End Dump (Caterpillar 773)	Gravel Haul Equipment	600	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D7 Dozer	Dozers	200	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.1E-02	3.6E-01	1.2E-01	4.7E-04	2.2E-02	2.2E-02	5.0E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.9E-04	1.3E-04	8.7E-05	7.9E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
Caterpillar D9 Dozer	Dozers	370	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D10 Dozer	Dozers	520	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar D11 Dozer	Dozers	770	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 324 Excavator	Backhoes/Graders	190	Ritchie Specs	1	2	0.59	High LF	720	0.37	3.0E-02	3.4E-01	1.1E-01	4.5E-04	2.1E-02	2.1E-02	4.7E+01	3.8E-04	1.9E-03	4.8E+01	1.9E-03	2.7E-04	1.2E-04	8.3E-05	7.5E-04	1.1E-05	3.4E-04	2.2E-04	2.7E-05	2.5E-05	4.9E-05
Caterpillar 336 Excavator	Backhoes/Graders	266	Ritchie Specs	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caterpillar 16M Motor Grader	Backhoes/Graders	312	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.6E-02	6.1E-01	2.1E-01	7.4E-04	3.5E-02	3.5E-02	7.8E+01	6.3E-04	3.2E-03	7.8E+01	3.1E-03	4.5E-04	2.0E-04	1.4E-04	1.2E-03	1.9E-05	5.6E-04	3.7E-04	4.4E-05	4.0E-05	8.0E-05
Skid Steer Loader (Caterpillar 272)	Backhoes/Graders	94	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.7E-02	1.6E-01	2.1E-01	2.0E-04	2.2E-02	2.2E-02	2.2E+01	1.8E-04	8.8E-04	2.2E+01	8.6E-04	1.2E-04	5.4E-05	3.8E-05	3.4E-04	5.2E-06	1.6E-04	1.0E-04	1.2E-05	1.1E-05	2.2E-05
Trencher (RTX1250)	Backhoes/Graders	120	Vermeer	0	2	0.59	High LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 Ton RT (Terex RC35)	Cranes	160	Ritchie Specs	1	2	0.43	Average LF	720	0.37	1.9E-02	2.3E-01	5.2E-02	2.7E-04	1.4E-02	1.4E-02	2.9E+01	2.3E-04	1.2E-03	2.9E+01	1.1E-03	1.6E-04	7.2E-05	5.0E-05	4.5E-04	6.9E-06	2.1E-04	1.4E-04	1.6E-05	1.5E-05	3.0E-05
75 Ton RT (Grove RT875E)	Cranes	275	Ritchie Specs	1	2	0.43	Average LF	720	0.37	3.0E-02	3.8E-01	7.7E-02	4.7E-04	1.8E-02	1.8E-02	4.9E+01	4.0E-04	2.0E-03	5.0E+01	2.0E-03	2.8E-04	1.2E-04	8.7E-05	7.8E-04	1.2E-05	3.6E-04	2.3E-04	2.8E-05	2.6E-05	5.1E-05
135 Ton RT (Grove RT9130E)	Cranes	300	Ritchie Specs	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 Ton Manitowoc Lattice (14000)	Cranes	340	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 Ton Manitowoc 2250 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M16000 Lattice	Cranes	500	Manitowoc	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Ton Forklift (Caterpillar C6000)	Forklifts/Loaders	63	Ritchie Specs	0	2	0.59	High LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Ton Forklift (Caterpillar P30000)	Forklifts/Loaders	148	Ritchie Specs	1	2	0.59	High LF	720	0.37	2.5E-02	2.7E-01	1.0E-01	3.5E-04	2.3E-02	2.3E-02	3.7E+01	3.0E-04	1.5E-03	3.7E+01	1.5E-03	2.1E-04	9.3E-05	6.5E-05	5.8E-04	8.9E-06	2.7E-04	1.7E-04	2.1E-05	1.9E-05	3.8E-05
Cat 460 Zoom Boom	Forklifts/Loaders	100	Ritchie Specs	2	2	0.59	High LF	720	0.41	3.7E-02	4.2E-01	3.7E-01	5.2E-04	4.1E-02	4.1E-02	5.5E+01	4.5E-04	2.2E-03	5.6E+01	2.2E-03	3.2E-04	1.4E-04	9.7E-05	8.8E-04	1.3E-05	4.0E-04	2.6E-04	3.1E-05	2.9E-05	5.7E-05
966 Loader w / bucket, forks, stinger (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / bucket (966H)	Forklifts/Loaders	286	Ritchie Specs	1	2	0.59	High LF	720	0.37	4.5E-02	5.1E-01	1.7E-01	6.7E-04	3.2E-02	3.2E-02	7.1E+01	5.8E-04	2.9E-03	7.2E+01	2.8E-03	4.1E-04	1.8E-04	1.2E-04	1.1E-03	1.7E-05	5.2E-04	3.4E-04	4.0E-05	3.7E-05	7.4E-05
966 Loader w / snow blower (966H)	Forklifts/Loaders	286	Ritchie Specs	2	2	0.59	High LF	720	0.37	9.0E-02	1.0E+00	3.4E-01	1.3E-03	6.4E-02	6.4E-02	1.4E+02	1.2E-03	5.8E-03	1.4E+02	5.6E-03	8.2E-04	3.6E-04	2.5E-04	2.3E-03	3.4E-05	1.0E-03	6.7E-04	8.1E-05	7.4E-05	1.5E-04
185 CFM (IR P135WIR)	Air Compressors/Drills	40	Ingersoll Rand	4	2	0.43	Average LF	720	0.41	1.6E-02	2.6E-01	9.2E-02	3.0E-04	2.7E-02	2.7E-02	3.2E+01	2.6E-04	1.3E-03	3.2E+01	1.3E-03	1.8E-04	8.0E-05	5.6E-05	5.1E-04	7.7E-06	2.3E-04	1.5E-04	1.8E-05	1.7E-05	3.3E-05
375 CFM (Sullair 375HH AF)	Air Compressors/Drills	140	Sullair	6	2	0.43	Average LF	720	0.37	1.0E-01	1.2E+00	2.7E-01	1.4E-03	7.6E-02	7.6E-02	1.5E+02	1.2E-03	6.1E-03	1.5E+02	6.0E-03	8.7E-04	3.8E-04	2.6E-04	2.4E-03	3.6E-05	1.1E-03	7.1E-04	8.6E-05	7.9E-05	1.6E-04
600 CFM (Doosan P600)	Air Compressors/Drills	173	Doosan	2	2	0.43	Average LF	720	0.37	4.1E-02	4.9E-01	1.1E-01	5.9E-04	3.1E-02	3.1E-02	6.2E+01	5.1E-04	2.5E-03	6.3E+01	2.5E-03	3.6E-04	1.6E-04	1.1E-04	9.9E-04	1.5E-05	4.5E-04	2.9E-04	3.5E-05	3.2E-05	6.4E-05
Track Drill (Caterpillar MD5150)	Air Compressors/Drills	385	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxlite - 7.5 KW (Magnum MLT4080)	Light Plants	11	Magnum	6	2	0.43	Average LF	720	0.41	1.2E-02	9.3E-02	9.7E-02	1.2E-04	1.6E-02	1.6E-02	1.3E+01	1.0E-04	5.1E-04	1.3E+01	5.0E-04	7.2E-05	3.2E-05	2.2E-05	2.0E-04	3.0E-06	9.1E-05	5.9E-05	7.2E-06	6.6E-06	1.3E-05
Stadium Light (BOSSLTG-BUMQ2516MH-E)	Light Plants	41	Boss LTG	2	2	0.43	Average LF	720	0.41	8.0E-03	1.3E-01	4.7E-02	1.5E-04	1.4E-02	1.4E-02	1.6E+01	1.3E-04	6.6E-04	1.6E+01	6.4E-04	9.3E-05	4.1E-05	2.8E-05	2.6E-04	3.9E-06	1.2E-04	7.6E-05	9.2E-06	8.4E-06	1.7E-05
JLG Articulating Lift 60' - 79' (JLG 800S)	Aerial Work Platforms	66	Ritchie Specs	4	2	0.21	Low LF	720	0.48	3.8E-02	2.3E-01	2.9E-01	2.9E-04	3.1E-02	3.1E-02	3.0E+01	2.5E-04	1.2E-03	3.0E+01	1.2E-03	1.7E-04	7.6E-05	5.3E-05	4.8E-04	7.3E-06	2.2E-04	1.4E-04	1.7E-05	1.6E-05	3.1E-05
JLG Articulating Lift 60' - 120' (JLG 1200SJP)	Aerial Work Platforms	87	Ritchie Specs	2	2	0.21	Low LF	720	0.48	2.5E-02	1.5E-01	1.9E-01	1.9E-04	2.0E-02	2.0E-02	2.0E+01	1.6E-04	8.2E-04	2.0E+01	8.0E-04	1.2E-04	5.0E-05	3.5E-05	3.2E-04	4.8E-06	1.5E-04	9.5E-05	1.1E-05	1.0E-05	2.1E-05
250-300 amp Diesel (SAE-300)	Welding Equipment	33	SAE	4	2	0.21	Low LF	720	0.48	1.4E-02	1.1E-01	9.5E-02	1.4E-04	2.1E-02	2.1E-02	1.5E+01	1.2E-04	6.1E-04	1.5E+01	6.0E-04	8.6E-05	3.8E-05	2.6E-05	2.4E-04	3.6E-06	1.1E-04	7.1E-05	8.6E-06	7.8E-06	1.6E-05
Generator, 20kw (Caterpillar XQ20)	Portable Generators	33	Caterpillar	0	2	0.43	Average LF	720	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generator, 80kw (Caterpillar XQ80)	Portable Generators	130	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generator, 120kw (Caterpillar XQE150)	Portable Generators	180	Perkins	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generator, 300 kw (Caterpillar XQ300)	Portable Generators	370	Caterpillar	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Envirovac (Hurricane 500 Vacuum)	Misc Equipment/Facilities	170	Industrial Vacuum	0	2	0.43	Average LF	720	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[a] Parenthetical descriptions are the assumed specific equipment type used to estimate horsepower.

[b] Equipment load factors from Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling (http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10016.pdf)

[c] Operating hours assume dto be 720 hours per month, as data was not provided

[d] PM2.5 assumed to be 100% of PM10

[e] Emission Rate (tons/month) = Emission Rate (g/bhp) * quantity * Hours/month * bph * Load Factor / 453.6 (lb/g) / 2000 (lb/ton)

[f] CO2e = CO2 + CH4 * 25 + N2O *2 98

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USACE
RECEIVED
MAR 2 1 2016
AK REGULATORY

March 9, 2016

Sandy Gibson, Project Manager
USACE Alaska District Regulatory Division
P.O. Box 6898
JBER, Ak 99506

Dear Ms. Gibson:

This letter is in regards to the Alaska Stand Alone Pipeline/ASAP Project's Fairbanks $PM_{2.5}$ Nonattainment Area Emissions Inventory & General Conformity Applicability Analysis dated November 18, 2015 along with the subsequent response to questions received January 21, 2016 by electronic transmission. After careful review, the department confirms that the project is below the *de minimis* threshold of 100 tons per year and therefore a full general conformity analysis is not required. This determination hinges on the project fulfilling a number of commitments for mitigating emissions, including contracting the use of Tier 4 engines.

Please inform the Air Quality Division if any major changes to the project occur, or if there are major changes to the assumptions that were used for the basis of the applicability analysis. If such changes were to occur, the applicability analysis would likely need to be revisited to ensure that it continues to meet the 100 ton *de minimis* threshold.

Particular attention should be given, during construction activities, to take reasonable precaution per 18 AAC 50.045(d) to prevent fugitive dust. Also, if the preferred method for disposal of debris in the development of any raw land is by open burning, "reasonable procedures to minimize adverse environmental effects and limit the amount of smoke generated" must be used, as well as acquiring any applicable permits. A complete description of the open burn guidance policy can be found at http://dec.alaska.gov/air/ap/docs/obrguide.pdf. A general requirement of the Air Quality Control Regulations is that wastes should be burned in a manner that does not cause a public health, safety or welfare threat, an environmental problem or a nuisance.

Thank you for contacting us about your project. If you have further questions or concerns about air quality issues, you may contact me at (907) 269-7579 or by e-mail at cindy.heil@alaska.gov.

Sincerely,

Cindy Heil
Program Manager, ANPMS

Clean Air

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