3.11 AESTHETICS

Aesthetics can refer to the perception of beauty by one or a combination of the senses, and can apply to the quality of life experienced by the general public and property owners (40 Code of Federal Regulations [CFR] Part 230.53). Aesthetic attributes addressed in this analysis focus on perceptual elements of the visual environment (including the night sky), soundscape, and olfactory elements (i.e., smell). Visual and olfactory attributes are difficult to measure, and are addressed qualitatively.

3.11.1 Environmental Impact Statement Analysis Area

The Environmental Impact Statement (EIS) analysis area for aesthetic resources extends west from Happy Valley on the Kenai Peninsula and Bristol Bay and Cook Inlet drainages to the eastern side of the Iniskin Peninsula, encompassing Iliamna Lake and the surrounding communities. For each alternative, the EIS analysis area includes:

- A 50-mile radius from the mine site (20-mile radius for night-sky impacts)
- A 10-mile radius from the ferry terminals (13-mile radius for night-sky impacts)
- A 20-mile buffer from the transportation corridor and natural gas pipeline (night-sky impacts not assessed)
- A 25-mile radius around the ports considered in each action alternative (13-mile radius for night-sky impacts)

For visual impacts, these distances were selected based on the relationship between distance, scale, and anticipated visibility. Visual contrast created by the project components is directly related to size and scale, as compared to surroundings. Larger-scale components (such as the mine site) would be most visible. Likewise, visual contrast decreases as viewing distance increases (BLM 1986). The distances noted above are the maximum distance that components would be expected to be noticeable to the viewer. The EIS analysis area also takes into account lands owned by seven Alaska Native Claims Settlement Act (ANCSA) corporations. The ANCSA does not provide provisions for the protection or management of visual resources; however, individual landowners may implement such management policies.

The visibility of night lighting may extend beyond what is visible under daylight conditions, and is estimated at a maximum of 20 miles for the mine site (similar to the skyglow effects from Red Dog Mine in northwestern Alaska), and 13 miles for the ferry terminals and ports (similar to skyglow effects from the Red Dog port). These distances are the maximum distance that changes to night sky due to skyglow are assumed to begin to occur, and were estimated using data from the New World Atlas of Artificial Night Sky Brightness (Falchi et al. 2016a, b), which reports artificial sky brightness for the entire world using high-resolution satellite data. These two facilities were used as proxies for estimating night-lighting impacts from the mine site, ferry terminals, and ports because of the similarity in their size and type of operations to the mine site and associated facilities. Night-sky impacts from the rest of the transportation corridor and natural gas pipeline are not evaluated, because no night lighting would be anticipated.

3.11.2 Methods for Establishing Baseline Conditions

Baseline visual resource conditions were established by: 1) completing a regulatory and management review; 2) developing a viewshed analysis to determine where the project could be visible (i.e., seen areas); 3) assessing landscape character attributes, viewer groups and related visual sensitivity, and visual distance zones (visibility) in the EIS analysis area; 4) analyzing viewer sensitivity from established Key Observation Points (KOPs); 5) estimating night-sky

conditions based on data available from the New World Atlas of Artificial Night Sky Brightness (Falchi et al. 2016a, b) and National Park Service (NPS) monitoring data for one location in Lake Clark National Park and Preserve (NPS 2013b); and 6) assessing baseline soundscape. These methods are consistent with procedures identified in the "Guide To Evaluating Visual Impact Assessments for Renewable Energy Projects" (NPS 2014b).

3.11.2.1 Regulatory and Management Framework

The regulatory and management framework review included federal, state, and local planning documents for planning areas with a geographic connection to the project area. The review focused on identifying specific regulations, planning objectives pertaining to visual resources or scenery management, or reference to valued scenery.

Per 33 CFR Part 320.4, applications for Department of the Army permits may involve areas that possess recognized scenic, conservation, or recreational values. Full evaluation of public interest requires that due consideration be given to the effect that the proposed activity may have on values such as those associated with wild and scenic rivers, national rivers, national parks, estuarine and marine sanctuaries, and other areas that may be established under federal or state law for similar or related purposes. Recognition of those values is often indicated by state, regional, or local land use classifications, or by similar federal land management objectives or policies. Action on permit applications should be consistent with and avoid adverse effects on the values or purposes that those classifications, controls, or policies were established for. Additional policies specifically applicable to certain types of activities are identified in 33 CFR Parts 321 through 324.

The project area is in the Alaska Department of Natural Resources (ADNR) Bristol Bay and Kenai planning units. These areas are managed per the Bristol Bay Area Plan (ADNR 2013a) and the Kenai Area Plan (ADNR 2001), respectively, to maintain the quality and diversity of the natural environment, and protect heritage resources and the character and lifestyle of the community.

3.11.2.2 Viewshed Analysis

Locations in the EIS analysis area where the project could potentially be seen were determined by implementing a viewshed analysis using geographic information system (GIS) viewshed modeling. This analysis determines potential project visibility based on the relationship between topography, height of project components, average eye height of the viewer, and height of vegetation. The resulting seen area represents an area or locations on the landscape where project features may be visible; however, it does not represent any measure of detectability of these features, or level of impact to aesthetic quality. This information informed the analysis of project visibility, including scale dominance and contrast (see Section 4.11, Aesthetics).

Pebble Limited Partnership (PLP) developed viewshed analyses for all alternatives (PLP 2018-RFI 034a, PLP 2018-RFI 034c, PLP 2019-RFI 034e, PLP 2020-RFI 034g), which were used to form the basis of analysis in Section 4.11, Aesthetics. Models were developed using assumptions of bare earth and vegetation (i.e., considering the potential screening effects of vegetation) for Alternative 1a and Alternative 1, and bare earth only for Alternative 2—North Road and Ferry with Downstream Dams and Alternative 3—North Road Only, at a viewer height of 5 feet, 5 inches. Bare earth was used for Alternative 2 and Alternative 3 as a conservative approach, with screening attributes of vegetation considered qualitatively based on results of the Alternative 1a and Alternative 1 viewsheds.

The resulting viewshed was clipped to buffer distances for each component specified by the EIS analysis area. The completed viewshed analyses are provided in Appendix K4.11.

3.11.2.3 Landscape Character

Landscape Character—Landscape character attributes were determined by dividing the EIS analysis area into geographic units defined by prevailing physiography (Wahrhaftig 1965), and then determining landscape character in each geographic unit. Landscape character attributes were described in terms of typology: the basic elements of form, line, color, and texture of prevailing landform, water, vegetation, and cultural modification. This approach was applied across the analysis area to ensure that baseline data in visual resources were collected consistently.

Viewer Groups—Viewer groups were identified through coordination with recreational, cultural, and subsistence resources, as well as review of scoping comments. These sources aided in understanding how specific locations in the EIS analysis area are used, and the types of viewer groups that may be associated with those uses. Characteristics of identified viewer groups, such as seasonality, amount of use, and predominant viewer activity, were included in this inventory.

There is seasonal variation in the number and type of viewers in the EIS analysis area. A majority of visitors come to experience the naturalness, and abundance of resources, from May through October (see Section 3.5, Recreation). This seasonal access corresponds with fishing and hunting activities and is the high season for recreation, tourism, and subsistence. Access to fishing and hunting areas for recreational and subsistence use is via aircraft, boat, and all-terrain vehicle (ATV). Commercial activities consist of fisheries, recreation, and tourism.

There are commercial recreation fishing lodges and camps on the Kvichak and Alagnak rivers. Several lodges provide guided fishing services on the main stem of the Alagnak River and at the outlet of Nonvianuk Lake, with one on the Kulik River. Together, these lodges support the majority of the visitation for fishing in the area. Access to the fishing lodges and camps is through aircraft or motorized boat. The elevated position from an aircraft provides a contextual experience, allowing the viewer to see broad expanses of the landscape.

Although the majority of recreation and tourism occurs in the summer, ongoing subsistence activity and inter-village travel occur in the winter. Because the wet grounds and waters freeze, travel via snowmachine provides access to areas not available in the warmer seasons.

Viewer Platforms—Viewer platforms are considered those locations where individuals are likely to experience views of the landscape in the EIS analysis area. Viewers in the EIS analysis area include local residents and communities, as well as those engaging in subsistence activities, recreation, or travel.

- **Local Communities**—Communities along the shoreline of Iliamna Lake consist of Iliamna, Newhalen, Pedro Bay, Kokhanok, and Igiugig. The community of Nondalton is to the north at the edge of Lake Clark National Park and Preserve. The landscape is dominated by vast panoramic views of Iliamna Lake, with a backdrop of the mountains of the Big River Hills.
- **Subsistence Areas**—See Section 3.9, Subsistence, for subsistence activity locations. Summer access to these areas is primarily via boat and ATV; while in winter, travel predominantly follows the frozen rivers and landscapes via snowmachine. Air travel is also prevalent throughout the year.
- **Recreation Areas—**Recreation extends from the fishing camps along Iliamna Lake into Lake Clark National Park and Preserve, Katmai National Park and Preserve, up the Koktuli River Watershed, and into the tundra of the Big River Hills, and includes the Newhalen and Gibraltar rivers. Outfitters provide guide services from fishing and hunting camps to remote locations in the Big River Hills, and fishing areas on Iliamna Lake and Kamishak Bay in the Cook Inlet. The McNeil River State Game Sanctuary and Refuge receives annual visitors as well.

- **Transportation Routes**—Several transportation routes used by industry, local communities, and subsistence and recreational users are limited to air travel, boat, ATV, and snowmachine. Short, unimproved roads connect the communities of Newhalen and Iliamna to Nondalton in the winter; although in the summer, that route involves an impassable river crossing. In the winter, there are transportation routes across Iliamna Lake or along its shores between the lake communities (see Section 3.12, Transportation and Navigation, for information on existing land, air, and water transportation routes).
- **Air Travel**—Low-altitude local aircraft may fly over the project area during scheduled air service or on route to remote communities or hunting/fishing destinations.

Distance Zone—Project visibility (i.e., distance zones) was assessed by subdividing into three zones based on relative distance from travel routes (land or water-based) or observation points. Common travel routes included common commercial flight paths and common local flight paths. Distance zones were classified as:

- Foreground (i.e., 0 to 0.5 mile from view point)
- Middleground (i.e., 0.5 mile to 5 miles)
- Background (i.e., over 5 miles)

3.11.2.4 Key Observation Points

KOPs representing common and/or sensitive viewer locations were established in the EIS analysis area. These locations represent point-based (e.g., vistas and residential areas), linear (e.g., roadways), and area-based (e.g., subsistence or recreational use areas) viewer locations. The KOPs were used as standard locations to describe existing visual resources at a localized scale, and to assess potential effects that may result from the project. A total of 15 KOPs were identified for use in the analysis, as described in Table 3.11-1 and shown in Figure 3.11-1.

3.11.2.5 Night Sky

The night sky is a combination of both natural and human-caused sources of light. Natural light sources include moonlight, starlight from individual stars and planets, the Milky Way, zodiacal light (i.e., sunlight reflected off dust particles in the solar system), the aurora borealis, fire, lightning, meteors, and airglow. Airglow is caused by radiation striking air molecules in the upper atmosphere, and appears similar to a faint aurora (NPS 2016f). Artificial lighting increases the night sky's brightness—an effect known as artificial skyglow. Artificial skyglow can affect the night sky for large distances, and for that reason is the most visible effect of light pollution (Falchi et al. 2016a).

The existing quality of the night sky is estimated based on data from the New World Atlas of Artificial Night Sky Brightness (Falchi et al. 2016a, b) and the NPS night-sky monitoring report at Keyes Point near the northern shore of Lake Clark in Lake Clark National Park and Preserve (NPS 2013b). The New World Atlas of Artificial Night Sky Brightness shows light pollution as the ratio of artificial sky brightness to natural brightness. For areas protected for scenic or wilderness character, a ratio of 1 to 2 percent indicates areas where attention should be given to protect a site from future increases in light pollution (Falchi et al. 2016a). A ratio of 8 to 16 percent is considered polluted from an astronomical point of view, meaning observations of astronomical features begin to be affected. The NPS (2013b) monitoring report includes photographs depicting natural airglow, as well as monitoring data and narrative, including the Bortle Class based on the Bortle Dark-Sky Scale as reported by the NPS observers. The Bortle Dark-Sky Scale is a nine-step scale used to rate sky conditions at an observation site from Class 1 (i.e., an excellent dark-sky site) to Class 9 (i.e., an inner-city sky) (Bortle 2001). Data from these two sources were used to estimate existing night-sky quality in the EIS analysis area.

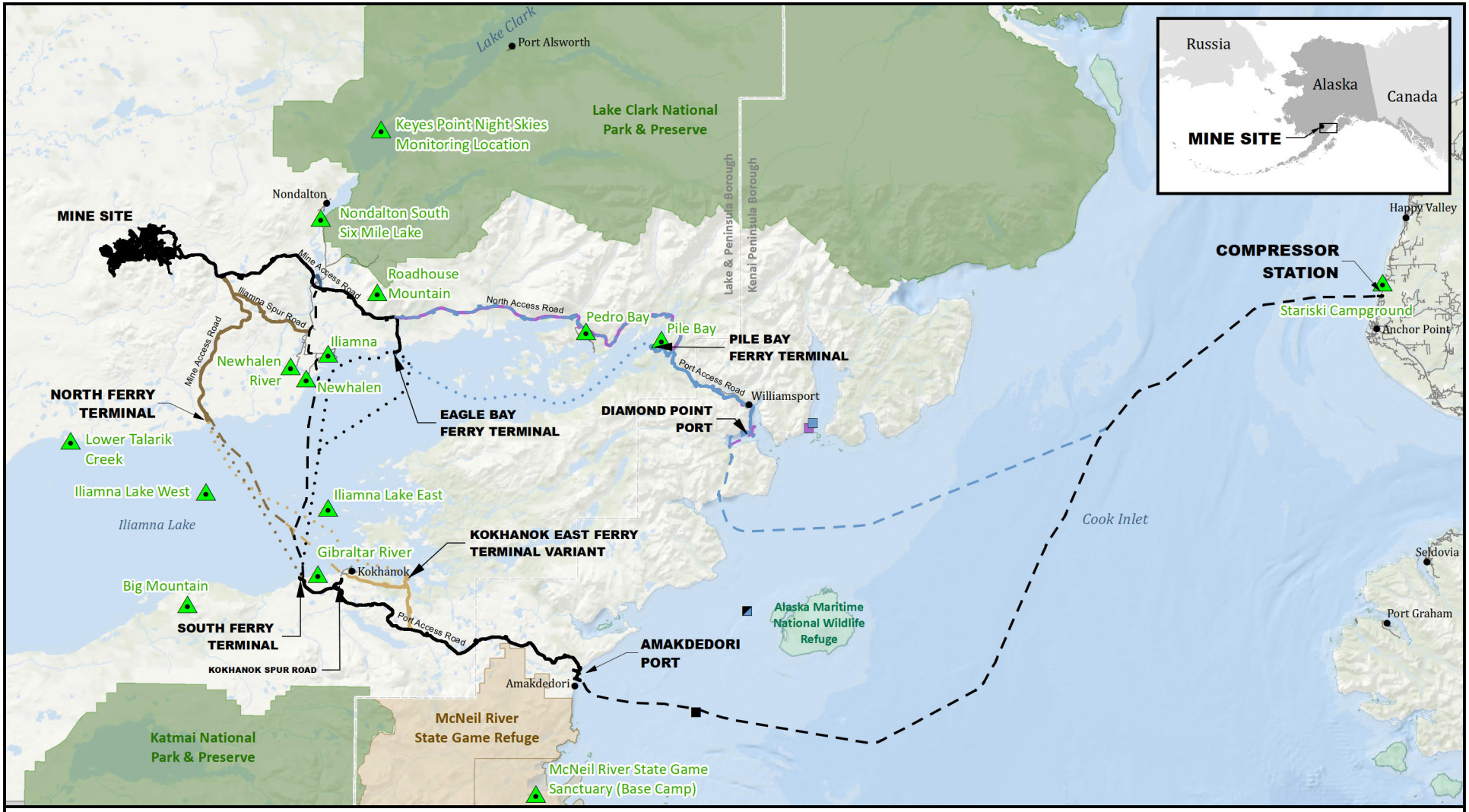
Table 3.11-1. Key Observation Points

KOP Number	Location	KOP Type	Viewer Group	Viewer Sensitivity	Project Component	Distance Zone	Viewer Geometry[1]	Viewer Activity
1	Stariski Campground	Point	Recreationists; Tourists	High	compressor station	Foreground to Middleground	At Grade	Stationary
2	McNeil River State Game Sanctuary (Base Camp)	Area	Recreationists; Tourists	High	Amakdedori port; port access road	Middleground	At Grade	Stationary —Transient
3	Iliamna Lake West	Area	Residents; Subsistence Users	Moderate-High	north ferry terminal; mine access road	Foreground to Background	At Grade; Inferior	Stationary —Transient
4	Iliamna Lake East	Area	Residents; Subsistence Users	Moderate-High	south ferry terminal; port access road	Foreground to Background	At Grade; Inferior	Stationary —Transient
5	Newhalen River	Linear	Residents; Subsistence Users; Recreationists	High	mine site; mine access road	Background	At Grade	Transient
6	Roadhouse Mountain	Point	Recreationists; Subsistence Users	Moderate	mine site; mine access road	Foreground to Middleground	Superior	Stationary
7	Big Mountain	Point	Recreationists; Subsistence Users	Moderate	mine site; port access road	Middleground; Background	Superior	Stationary
8	Nondalton South	Point	Residents	High	mine site; mine access road	Background	At Grade; Inferior	Stationary —Transient
9	Iliamna	Point	Residents	High	mine access road	Middleground	At Grade	Stationary
10	Newhalen	Point	Residents	High	mine access road	Background	At Grade	Stationary
11	Pedro Bay	Point	Residents	High	north access road	Foreground	At Grade	Stationary
12	Pile Bay	Point	Residents	High	port access road	Foreground	At Grade	Stationary
13	Gibraltar River	Point	Recreationists; Subsistence Users	Moderate	south ferry terminal	Foreground to Middleground	At Grade	Transient
14	Lower Talarik Creek Special Use Area	Point	Residents, Recreationists; Subsistence Users	Low	north ferry terminal	Background	At Grade; Inferior	Transient
15	Lake Clark National Park and Preserve Keyes Point Night Skies Monitoring Location	Point	Residents, Recreationists; Subsistence Users	Low	mine site, mine access road	Background	At Grade	Transient

Notes:

[1] Viewer geometry refers to the spatial relationship of the viewer to the object, including the vertical and horizontal angle; and is defined in Section 4.11, Aesthetics.

KOP = Key Observation Point



Sources: PLP 2020-RFI168; PLP 2019-RFI153; ADNR

US Army Corps of Engineers

5 0 5 10

Miles

Key Observation Points

Action Alternatives

- Lightering Locations
- Ferry Routes
- Natural Gas Pipelines
- Alternative 1a
- Alternative 1
- Alternative 1 Kokhanok East Ferry Terminal Variant
- Alternative 2
- Alternative 2 Newhalen River North Crossing Variant
- Alternative 3

Other Features

- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- State Game Refuge/Sanctuary

KEY OBSERVATION POINTS

PEBBLE PROJECT EIS

FIGURE 3.11-1

3.11.2.6 Soundscape

Information on soundscape was derived from applicable noise and vibration concepts, as well as methodologies used in characterizing noise of the affected environment (AECOM 2018c) (see Section 3.19, Noise). The ambient sound level (i.e., soundscape) is a composite of sound from all sources, including natural background and anthropogenic sources. Existing ambient sound levels are often the starting point for analyzing project-associated noise impacts, because such environmental noise analysis typically compares project-associated noise to either existing ambient or natural background sound, based on applicable adverse effect or impact assessment criteria. Existing ambient sound was evaluated for the EIS analysis area, including the mine site, port, transportation corridor, and natural gas pipeline corridor for each alternative and variants, as well as the surrounding area where project-associated noise could have a direct effect on human receptors.

3.11.3 Landscape Character

The landscape setting in the visual resources EIS analysis area includes mountain ranges surrounded by river valleys, rivers, shrub tundra, marshy lowlands, wetlands, coastal shoreline, estuaries, and ocean inlet environments. Primary river drainages intersecting the EIS analysis area include the Mulchatna, Nushagak, and Koktuli rivers. Waterways provide access to remote recreational and subsistence use areas. Human development in the EIS analysis area is generally limited to areas in and around geographically isolated communities and small fishing and hunting lodges. Development includes roads, airstrips, docks, houses, schools, community centers, and other structures in the communities.

3.11.3.1 Regional

The EIS analysis area is in portions of four different physiographic units: Nushagak-Big Hills, Nushagak-Bristol Bay Lowland, Aleutian Range, and Alaska Range (Wahrhaftig 1965). The landscape character of each physiographic unit is influenced by the fluvial geomorphologic, hydrologic, vegetation cover, elevation, and landforms.

The **Nushagak-Big River Hills** are characterized by flat-topped ridges ranging in elevation from 1,500 feet to the west, 2,500 feet to the east, and 4,200 feet to the north. The Big River Hills unit drains to the Kuskokwim River from primary tributaries. The southern section of the physiographic unit drains to the Mulchatna and Nushagak rivers. Vegetation communities consist of spruce, birch, and cottonwoods along riparian corridors (Shacklette et al. 1969; ADNR 2005).

The **Nushagak-Bristol Bay Lowland** is dotted with moraine lakes rising from sea-level to an elevation of 300 to 500 feet at its high point. Linear narrow belts of elevated topography enclose large glacial lakes fed by upland hydrology. The lowland is drained by the Nushagak River and other rivers flowing to the estuaries of Bristol Bay. This physiographic unit is characterized by the marine phase of the tundra climate with mild winters and short, cool summers. Dominant vegetation includes moist wet tundra plant communities. Standing water, mosses, sedges, and low-growing shrubs cover the landscape with clumping stands of alder, willow, and patches of stunted spruce and birch growing along the riparian edges of major streams and rivers (Shacklette et al. 1969; Bailey 1995).

The **Aleutian Range** consists of heavily glaciated U-shaped valleys, rugged ridges, and mountain peaks anchored between the Pacific Ocean and the Bering Sea. This range runs west to the Aleutian Islands, with an elevation ranging from 1,000 to 4,000 feet. The Aleutian Range is flanked by large volcanic peaks elevating upward to 8,500 feet. Steep rivers drain south to the Pacific Ocean, while braided meandering rivers run slowly to the Bering Sea. The western end of the Aleutian Range drains into the Bristol Bay Lowland, feeding hundreds of small lakes and

ponds. Vegetation is sparse and consists of spruce, birch, and cottonwoods along riparian corridors; and a spattering of open low-shrub tundra as the elevation increases (Shacklette et al. 1969; Kevin Waring & Associates 2015a).

To the east, the **Alaska Range** connects with the Aleutian Range between Iliamna Lake and Mount Spurr. This mountain range extends over 600 miles to the Canadian border. The heavily glaciated mountain ranges average between 7,000 and 10,000 feet in elevation, with a number of peaks exceeding 10,000 feet. The Alaska Mountain range is the divide for rivers flowing from the Yukon Territory south to the Gulf of Alaska. The southern section drains through glacial streams to the Kuskokwim River and to the Nushagak or Kvichak rivers, eventually flowing into Bristol Bay (Shacklette et al. 1969; Kevin Waring & Associates 2015a).

3.11.3.2 EIS Analysis Area

Mine Site

The mine site would be in the southern section of the Nushagak-Big River Hills physiographic unit. This landscape is characterized by the rugged Sharp, Pig, Kaskanak, and Groundhog mountains that appear prominent and distinct from the surrounding lowlands and Iliamna Lake.

Views from ridgetops are largely panoramic; however, there is more enclosure in drainages and low-elevation areas. Topography is dominated by numerous rounded hills that appear consistent and well-defined by the converging lines of drainages. As elevation increases, trees become stunted and vegetation becomes intermixed with short alpine tundra and exposed rock outcrops.

The upper sections of Upper Talarik Creek and North Fork and South Fork Koktuli rivers meander through eroded, braided wetlands and tundra flowing into Iliamna Lake to the Kvichak River, before draining into Bristol Bay. The Talarik Creek floodplain is characterized by exposed flat grasslands and low sand dunes created from strong winds with little vegetation diversity. These river systems provide important travel routes to remote areas for subsistence use in the summer and winter.

Single-day tours are almost exclusively via aircraft. Visitors are flown into surrounding parks and other destinations over the project area to access bear-viewing locations along the coastline, in the estuaries, and up the stream corridors and over the glaciers of Four Peaks Mountain. Multi-day commercial tours either stage outside the park on large boats in Kamishak Bay, or at lodges in the park.

Viewer groups in this area include individuals engaged in subsistence or recreational activities. These individuals experience the landscape from fixed points while fishing or viewing wildlife, and can be transient as they move through the landscape on foot, snowmachine, boat, or aircraft. Small aircraft are used to provide access for fishing and hunting areas; and to a lesser extent, provide tours for nature viewing. Areas on the flight paths provide an expansive view of the landscape settings. During winter months when the ground is frozen, overland travel via snowmachine is common.

Transportation Corridors

The transportation corridor would be a linear system that cuts through the Nushagak-Big River Hills and Nushagak-Bristol Bay Lowland physiographic units.

Under Alternative 1a, Alternative 1, and Alternative 2, the transportation corridor would cross Iliamna Lake. The shallow shoreline is made up of meandering inlets, checkered islands, and long, fine edges. Low topographic relief provides extensive panoramic views extending across the tundra to Iliamna Lake. In the immediate foreground, the wet shrub tundra presents limited

obstruction to vast views of the surrounding landscape. To the west are the Bristol Bay lowlands, made of wet shrub tundra, marsh lands, and hundreds of small lakes. Northern views feature the rounded mountains of the Nushagak-Big River Hills.

Viewer positions along Iliamna Lake are either from the shoreline or from a boat on the water. Access to the surrounding landscape for commercial, subsistence, and recreational uses are via the main airport and community of Iliamna. Air transportation is a prominent form of travel in the area. From the elevated position in an aircraft, a viewer can relate to the expansive, undisturbed landscape setting. There is minimal lighting visible from the existing communities, which is primarily seen in the winter months when there is limited daylight. In 1999, the State of Alaska established the Lower Talarik Creek Special Use Area as a high-value resource for fish and wildlife habitat and subsistence harvest, as well as local and commercial recreation (ADNR 2005). Viewer groups in this area include individuals engaged in subsistence or recreational activities, as well as travelers.

Parts of Alternative 1a, Alternative 2, and Alternative 3 include transportation corridors on the northern end of Iliamna Lake. This portion of the lake is characterized by the broad floodplains of Chekuk Creek, Knutson Creek, and the Pile River. The ridgelines of Three Sisters Mountain, Knutson Mountain, and Roadhouse Mountain rise prominently from the river valleys. Lake Clark National Park and Preserve is to the north and east of the transportation corridor access roads at the northwestern edge of the Alaska Range. The features are visible from aircraft while traveling in and out of the park or local communities.

Roadhouse Mountain is a popular summer ATV route southwest of the mine site along the border of Lake Clark National Park and Preserve and the northern end of Iliamna Lake. Expansive 360-degree panoramic views dominate the viewer experience from the top of Roadhouse Mountain. Significant visual features include Iliamna Lake and its distinctive shoreline. The marshy wet lowlands and the river valleys of the Nushagak-Big River Hills dominate the foreground view, while Sharp, Groundhog, and Kaskanak mountains frame the background views.

The Alagnak River is designated as a Wild River in the Wild and Scenic River System. The Alagnak River is about 45 miles west of the mine site, 30 miles from Iliamna Lake, and more than 20 miles from the Alternative 1a and Alternative 1 transportation corridor (outside of the EIS analysis area considered under Alternative 2 and Alternative 3). The Alagnak River provides opportunities for exemplary Alaska recreation due to remoteness, scenery, and sport fisheries. The Alagnak River is accessed by aircraft and from the western side of Katmai National Park and Preserve. The river has a reputation of being a world-class fishery, and is considered to be one of the most popular fly-in fishing destinations in southwestern Alaska.

The McNeil River State Game Refuge is in the EIS analysis area under the Alternative 1a and Alternative 1 port access roads and Amakdedori port. Section 3.5, Recreation, describes bear viewing, and the McNeil State Game Refuge and Sanctuary as a premier destination for viewing brown bears. The Alaska Department of Fish and Game operates a visitor bear-viewing program at McNeil River from early June through late August. Guided bear viewing and private visitor bear viewing occur during the month of July (ADF&G 2018b) (see Section 3.23, Wildlife Values).

Soundscape

Noise receptors in the analysis area for the transportation corridors generally include subsistence users, recreationists, and residents. The existing ambient noise level is estimated to be comparable to “wilderness ambient,” as described for the mine site and port analysis areas (see Section 3.19, Noise) with a 35 decibel day-night average noise level (L_{dn}) (see Section 3.19, Noise, for additional information on baseline noise conditions in the EIS analysis area).

Amakdedori Port

The Amakdedori port site (Alternative 1a and Alternative 1) is on state lands designated for habitat use in the Kenai Peninsula Borough area boundary. The area in the northern part of the Aleutian Range is wet shrub tundra, collecting runoff forming wet meadows, bogs, and hundreds of small lakes.

Viewer groups include private outfitters who operate single- and multi-day commercial tours to Katmai National Park and Preserve from May through September. Single-day adventure tours are offered from as far away as Anchorage and as close as Dillingham.

Diamond Point Port

The Diamond Point port site (Alternative 2 and Alternative 3) is in Iliamna Bay on the western side of Cook Inlet. The bay is characterized by the rugged topography of the Chigmit Mountains, which steeply slope to the water. The existing Williamsport-Pile Bay Road is at the northern tip of the bay, connecting Williamsport to Pile Bay Village on Iliamna Lake. Viewer groups include local residents and recreationists traveling to and from Lake Iliamna.

Natural Gas Pipeline

The landscape character of the pipeline rights-of-way (ROWs) is the same as those described for the transportation corridors, because the pipelines would be co-located with the transportation corridor of either Alternative 1 or Alternative 3; the discussion for the transportation corridor under Alternative 2 and Alternative 3 is relevant to the Alternative 2 pipeline route, with the exception of the portion between Diamond Point port and Ursus Cove for Alternative 2 and Alternative 3, and the portion between the lakeshore and the transportation corridor under Alternative 1a. The pipeline would terminate on the Kenai Peninsula near Anchor Point and Anchor Point Recreation Area. Views from this area include Cook Inlet and distant peaks of the Aleutian Range. The area is populated with residents, recreationists, tourists, and commercial operators using Cook Inlet and the Kenai Peninsula as a base to access the natural and remote setting of Bristol Bay, Iliamna Lake, and the national park units.

3.11.4 Night Sky

Night-sky conditions in the EIS analysis area are almost entirely pristine, with a ratio of artificial night brightness to natural night brightness of less than 1 percent. There is one exception surrounding the Iliamna Airport, where artificial night lighting affects the quality of the night sky. Artificial brightness is between 8 to 16 percent of the natural background in an approximately 5-mile radius around the airport, which is considered polluted on an astronomical point of view (Falchi et al. 2016a). The ratio of artificial brightness to natural brightness is 1 percent or greater in an approximately 6-mile radius around the airport. The NPS performed night-sky monitoring at Keyes Point near the northern shore of Lake Clark, describing the area as having moderate naturally occurring airglow. This monitoring did not identify any visible lights or domes anywhere along the horizon that could be seen with the naked eye, and assigned the location as Bortle Class 2 (NPS 2013b). A Bortle Class 2 indicates a “typical truly dark site,” where airglow may be weakly apparent along the horizon and the Milky Way appears highly structured to the unaided eye, indicating high-quality night sky (Bortle 2001).

3.11.5 Soundscape

Baseline noise levels of the EIS analysis area are compatible with outdoor ambient sound levels consistent with a “wilderness ambient,” classification (baseline noise level of 35 dBA L_{dn}) (see Section 3.19, Noise).