BIOLOGICAL ASSESSMENT

DeLong Mountain Transportation System Port Basin Dredging and Bank Stabilization, Individual Permit for USACE

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Anchorage, Alaska

June 2021

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LIST OF ABBREVIATIONS AND ACRONYMS

BA	Biological Assessment
CFR	Code of Federal Regulations
dB	Decibel
DPS	Distinct Population Segment
ESA	Endangered Species Act
FR	Federal Register
ft	Feet
HTL	High Tide Line
Hz	Hertz
km	kilometer
LOC	Letter of Concurrence
m	meter
MHW	Mean High Water
mi	mile
MLLW	Mean Lower Low Water
ND	No critical habitat designated
NLAA	May affect, not likely to adversely affect
NMFS	National Marine Fisheries Service
PTS	Permanent Threshold Shift
PSO	Protected Species Observer
rms	Root Mean Squared
TTS	Temporary Threshold Shift
US	United States
USACE	United States Army Corps of Engineers
USC	United State Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
yd	yard

1.0 INTRODUCTION

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973 (16 United States [U.S.] Code [USC] 1531 et seq.), this Biological Assessment (BA) has been prepared to analyze the potential effects of dredging under an Individual Permit issued by the U.S. Army Corps of Engineers (USACE) at the DeLong Mountain Transportation System's Port in the Chukchi Sea on threatened and endangered species under the jurisdiction of the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). Section 7(a)(2) of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to:

1) jeopardize the continued existence of any federally threatened or endangered species, or species proposed for listing, or
2) result in the destruction or adverse modification of designated or proposed critical habitat.

The definitions in making the determination of effect under Section 7 of the ESA are based on the USFWS and NMFS Endangered Species Consultation Handbook (USFWS and NMFS 1998).

This BA is organized as follows:

- Chapter 2 of this BA describes the Proposed Action and Action Area.
- Chapter 3 provides information on the baseline conditions within the Action Area, including information on the ESA-listed species and critical habitat that occur or may occur in the Action Area.
- Chapter 4 provides a description of potential effects to ESA-listed species and critical habitat.
- Chapter 5 presents conclusions of the BA, including the proposed Section 7 effects determinations.
- Chapter 6 provides a detailed list of references used.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Purpose of the Action

The project purpose is to complete annual maintenance dredging when free of ice at the DeLong Mountain Transportation System Port to support permitted and constructed facilities in the Chukchi Sea. The discharged material will supply sand for beach nourishment and shoreline protection in the shallow water discharge area. Beach formulation and maintenance protects inland resources (including ponds, wetlands, and historic resources) by maintaining a beach complex. The port basin will be dredged to than 6.7 meters (m) (-22 feet [ft], MLLW = 0.0 ft elevation (relative to 0 ft Mean Lower Low Water [MLLW]) for vessel traffic at the dock and caissons. The DeLong Mountain Transportation System Port is an existing constructed and permitted facility that has been in place since 1983.

The Alaska Industrial Development and Export Authority is the owner of the DeLong Mountain Transportation System Port and Road. Teck Alaska Incorporated - Red Dog Operations is the operator responsible for the maintenance dredging and shallow water material disposal at the DeLong Mountain Transportation System Port.

2.2 Need for the Action

Without maintenance dredging, vessels will not be able to use the port, and the port will cease operations. The port is the only marine transportation link in the region, and an indirect effect would be the closure of the DeLong Mountain Transportation System and the Red Dog Mine, which depends on the DeLong Mountain Transportation System to support operation. The dredged sand material also needs to be disposed of after excavation. Dredged material and beach sand have been placed on the south side of the port in a shallow water disposal area to help maintain the beach complex.

2.3 Detailed Description of the Proposed Action

The Proposed Action is to conduct DeLong Mountain Transportation System Port Basin Dredging and Bank Stabilization (Figure 1).

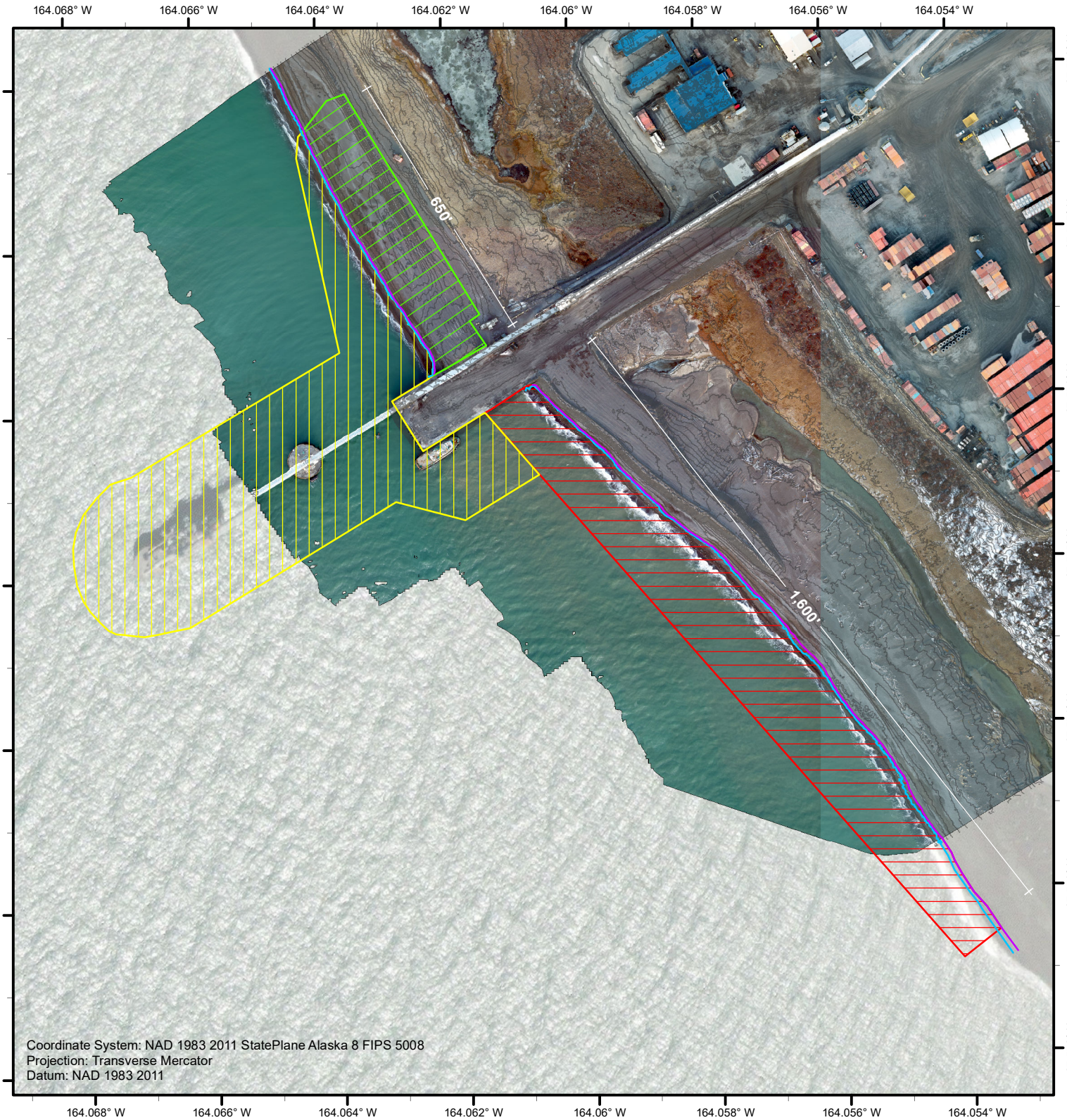
The project will dredge up to 500,000 cubic yards (an average of 50,000 cubic yards annually for 10 years) of material from the subsurface of an 8.5-acre area of navigable marine waters of the U.S., waterward of Mean High Water (MHW) and discharge up to 500,000 cubic yards (an average of 50,000 cubic yards annually for 10 years) of dredged material in 5.7 acres of waters of the U.S., below the high tide line. All dredged and excavated beach material will be discharged in the shallow water discharge area.

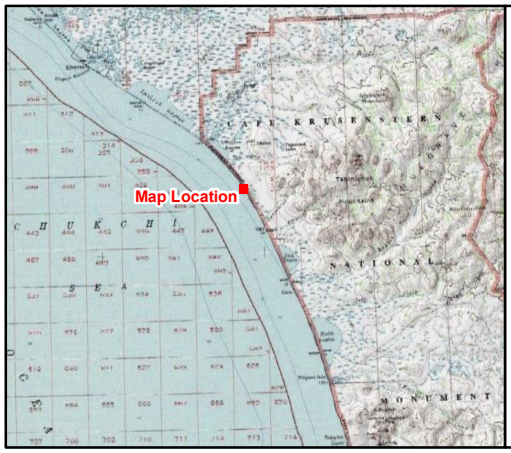
Dredging below waterline in the port basin historically has been done with a clam shell on the dock crane and, when required, a clam shell on a barge. The barge is chartered from Juneau, Alaska, and travels to the port by tug, stays on site for about 1 week, and returns to Juneau.

USACE non-jurisdictional beach sand excavation will take place above High Tide Line (HTL). USACE jurisdictional beach sand excavation may also take place between MHW and HTL in up

to 0.05 acre. All excavated beach sand and dredge material will be stored above HTL in a staging area prior to disposal in the shallow water discharge area.

Earth moving equipment will place beach sand and dredge material during low tidal stages by pushing material from the staged location to the shallow water discharge area. No earth moving equipment will work in water.





High Tide Line (6.3 ft)

Mean High Water (6.0 ft)

1' LiDAR-derived Contour

Project Work

Beach Sand Excavation Area

Maintenance Dredging Area

Shallow Water Discharge Area

0.02-meter aerial imagery and LiDAR elevation;
date aquired: October 2020
Background imagery 0.5-meter ESRI World Imagery;
date aquired: 06/25/2020

0 100 200 400 Feet

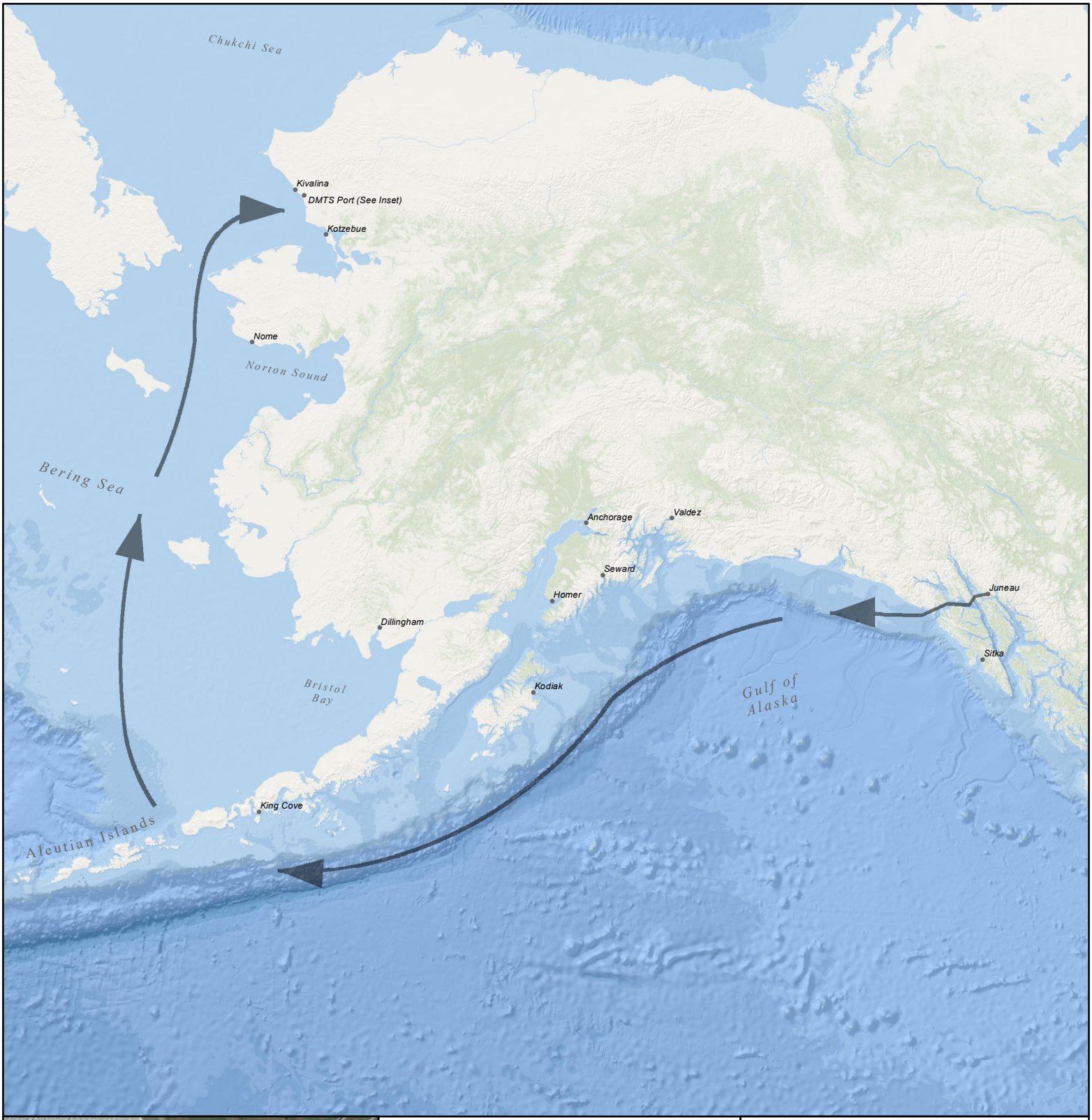
1 inch = 300 feet 1:3,600

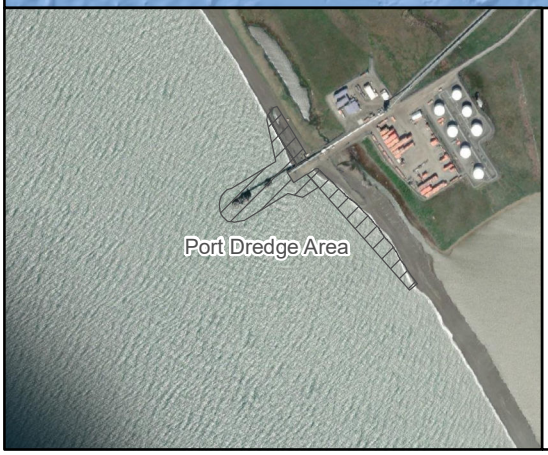
Applicant: Alaska Industrial Development and Export Authority	
File No.: POA-1983-359	
Waterway: Chukchi Sea	
Proposed Activity: Maintenance dredging and discharge	
Kateel Meridian | T25N, R24W, S10	
Lat.: 67.5766 N	Long.: 164.0600 W
Sheet: 1 of 1	April 2021

2.4 Action Area

The Action Area includes the port's proposed dredging and discharge of dredged material (Figure 1). It also includes the chartered barge route between Juneau, Alaska, and the port (Figure 2).

All endangered species in the vicinity of the port and potential barge routes have been included in this analysis.





General Barge Route

0 100 200 300 Miles

(At original document size of 8.5x11)

1:12,000,000 1 inch = 1,000,000 feet

N W E S

Background data source: ESRI World Ocean Base, ESRI World Imagery (Inset)

Applicant: AK Industrial Development and Export Authority	
Project: POA-1983-359	
Waterway: Chukchi Sea	
Action Area	
Lat.: 67.5766 N	Long.: 164.0600 W
Figure: 2	May 2021

2.5 Conservation Measures

Conservation measures that would be implemented under the Proposed Action include:

1. Equipment Lighting
    a. To minimize potential eider collisions, as safety allows, equipment would reduce lighting during inclement weather to minimize attracting birds and potential collisions.
2. Protected Species Observers (PSOs) and/or PSO-equivalents
    a. NMFS generally recommends using trained Protected Species Observers (PSO) to conduct marine mammal observations. However, given the experience of locals with marine mammals, the remote location of this work, and the low level of expected impact, crew members, hereafter referred to as PSO-equivalents, would be acceptable for monitoring for the presence of marine mammals, provided the following conditions are met:
        i. Crew members designated as PSOs/PSO-equivalents must be proficient in spotting and identifying Alaska marine mammals at a distance, either through training, or existing local experience (e.g., Alaska Native with hunting experience or Field Environmental Coordinator).
        ii. PSOs/PSO-equivalents will have no other primary duties assigned during the time they are conducting marine mammal observations.
        iii. PSOs/PSO-equivalents will work in shifts lasting no longer than 4 hours, with a one-hour break between shifts, and will not work for more than 12 hours in a 24-hour period. PSOs/PSO-equivalents duties may be shared among two or more crew members, providing all marine mammal observer requirements are met.
        iv. PSOs/PSO-equivalents must have equipment that allows them to view adequately the entire action area (e.g., binoculars, spotting scope) and must be positioned at the best practical vantage point.
        v. PSOs/PSO-equivalents will have the ability to communicate in real-time with equipment operators either directly or through voice communication tools and will have the authority to delay or cease operations if necessary, to avoid take of marine mammals.
3. Dredging Procedures
    a. Avoidance and Minimization
        i. All dredging will take place in basin water depth less than 6.7 m (-22 ft, MLLW = 0.0 ft).
        ii. The area to be dredged has been limited to the port basin and the smallest practicable beach footprint. The shallow water discharge area is designed to supply protection for the existing beach structure.
        iii. The dredged material will be removed from an existing basin. The material is natural beach sand and will be transported in the same direction as littoral (longshore) drift. Deposited material will stabilize the existing bank. No wetlands will be impacted.

iv. Dredge operations will occur in an ice-free environment (June 1 or as soon as the port is ice free).
    1. If project activities will occur outside of the time window specified in the Letter of Concurrence (LOC), the Applicant will notify NMFS of the situation.

b. NMFS will be informed of dredging start-up one week prior to the onset of those activities.
c. Prior to in-water construction, a shutdown zone with a radius of 300 m around the dock will be established.
d. At least 15 minutes prior to initiation of dredging, PSO-equivalents will conduct a visual scan of the action area. The 15-minute pre-work scan should also occur if there has been a break in dredging for more than 1 hour. The entire action area must be visible during the pre-work scan and during the entire operation period.
e. If a marine mammal enters the shutdown zone during operations, dredging will stop and will not resume until marine mammals are observed departing the area or have not been seen for 15 minutes.
f. If any listed marine mammal is observed within the action area before operations can be shut down, or if any marine mammals are injured or killed from project activities, operations will cease immediately, and Teck Alaska will contact NMFS Alaska Region Protected Resources Division to develop next steps prior to resuming operations.

4. Barge transit between Juneau, Alaska, and the port
    a. Vessel operators will take reasonable precautions to avoid interaction with listed marine mammals by taking the following actions:
        i. Vessel operators will maintain a watch for listed marine mammals at all times while underway.
        ii. As safety allows, vessels will stay at least 100 m (110 yards [yds]) away from listed marine mammals, except they will remain 460 m (500 yds) from endangered North Pacific right whales (50 Code of Federal Regulations (CFR) § 224.103(d)).
        iii. Operators will reduce vessel speed to less than 9 kilometer [km]/hour (5 knots) when within 274 m (300 yds) of a whale.
        iv. Unless necessary to reduce the risk of collision, vessel operators will avoid changes in direction and speed when within 274 m (300 yds) of whales.
        v. Vessel operators will not position vessel(s) in the path of whales and will not cut in front of whales in a way or at a distance that causes the cetaceans to change their direction of travel or behavior (including breathing/surfacing pattern).
        vi. Operating the vessel(s) to avoid causing a whale to make changes in direction.
        vii. Checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

viii. Reducing vessel speed to 18 km/hour (10 knots) or less when weather conditions reduce visibility to 1.6 km (1 mile [mi]) or less.
ix. Marine vessels servicing the proposed work sites will maintain a buffer from marine mammals hauled out on land or ice to avoid disturbance. Vessels less than 30 m (100 ft) long will remain at least 0.8 km (0.5 mi) from hauled out marine mammals. Vessels greater than 30 m (100 ft) long will remain at least 1.6 km (1 mi) from hauled out marine mammals.
x. If a whale's course and speed are such that it will likely cross in front of a vessel that is underway, or approach within 91 m (100 yds) of the vessel, and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel, except that vessels will remain 460 m (500 yds) from North Pacific right whales (50 CFR § 224.103(d)).
xi. If the vessel is taken out of gear, vessel crew will ensure that no whales or other listed marine mammals are within 50 m (54 yd) of the vessel when propellers are re-engaged, thus minimizing risk of marine mammal injury.
xii. Vessels will take reasonable steps to alert other vessels in the vicinity of whale(s).
xiii. Vessels will not allow lines to remain in the water, and no trash or other debris will be thrown overboard, thereby reducing the potential for marine mammal entanglement.
xiv. The transit route for the vessels will avoid designated critical habitat to the extent practicable.

b. Vessel transit, sea otter critical habitat
   i. No operations will occur in sea otter critical habitat.
c. Vessel transit, North Pacific right whales, and their critical habitat. Vessels will:
   i. Remain 460 m (500 yds) from North Pacific right whales (50 CFR § 224.103(d).
   ii. Avoid transiting through designated North Pacific right whale critical habitat (73 Federal Register (FR) 19000); or
   iii. Avoid traveling within or through North Pacific right whale critical habitat. If traveling within or through North Pacific right whale critical habitat cannot be avoided:
   iv. Vessels will travel through North Pacific right whale critical habitat at 5 kts or less; or
   v. Vessels will travel through North Pacific right whale critical habitat at 10 kts or less while PSOs maintain a constant watch for marine mammals from the bridge
   vi. Vessel speed while within North Pacific right whale critical habitat will not exceed 10 kts.
   vii. Operators will maintain a ship log indicating the time and geographic coordinates at which vessels enter and exit North Pacific right whale critical habitat.

d. Vessel transit, western Distinct Population Segment (DPS) Steller sea lions, and their critical habitat.
    i. Vessels will not approach within 5.5 km (3 nm) of rookery sites listed in (50 CFR § 224.103(d)).
    ii. Vessels will avoid approaching within 914 m (3,000 ft) of any Steller sea lion haulout or rookery.
e. Vessel Transit in the Arctic
    i. Project vessels will not travel in waters used by migrating bowhead whales during their seasonal migrations.

5. Stranded, Injured, Sick or Dead Marine Mammal (not associated with the project)
    a. If PSOs/PSO-equivalents observe an injured, sick, or dead marine mammal (i.e., stranded marine mammal), they will notify the Alaska Marine Mammal Stranding Hotline at 877-925-7773. Data submitted to NMFS in response to stranded marine mammals will include date/time, location of stranded marine mammal, species and number of stranded marine mammals, description of the stranded marine mammal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine mammals.
6. Data Collection and Reporting
    a. PSOs/PSO-equivalents will record observations on data forms or into electronic data sheets, electronic copies of which will be submitted to NMFS in a digital spreadsheet form at the end of the project.
    b. PSOs/PSO-equivalents will record the following:
        i. The date and start and stop time for each PSO/PSO-equivalent shift;
        ii. Date and time of each significant event (e.g., a marine mammal sighting, operation shutdown, reason for operation shutdown, change in weather)
        iii. Weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state where the Beaufort Wind Force Scale will be used to determine sea-state (https://www.weather.gov/mfl/beaufort);
        iv. Species, numbers, and, if possible, sex and age class of observed marine mammals, along with the date, time, and location of the observation;
        v. The predominant sound-producing activities occurring during each marine mammal sighting;
        vi. Marine mammal behavior patterns observed, including bearing and direction of travel;
        vii. Behavioral reactions of marine mammals just prior to, or during sound producing activities;
        viii. Location of marine mammals, distance from observer to the marine mammal, and distance from the predominant sound-producing activity or activities to marine mammals;
        ix. Whether the presence of marine mammals necessitated the implementation of mitigation measures to avoid acoustic impact, and the duration of time that normal operations were affected by the presence of marine mammals.

x. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).

7. Illegal Activities
    a. If PSOs/PSO-equivalents observe marine mammals being disturbed, harassed, harmed, injured, or killed (e.g., feeding, or unauthorized harassment), these activities will be reported to NMFS Alaska Region Office of Law Enforcement at (1-800-853-1964).
    b. Data submitted to NMFS will include date/time, location, description of the event, and any photos or videos taken.

3.0 DESCRIPTION OF ESA-LISTED SPECIES AND CRITICAL HABITAT

ESA protected species that potentially occur in the Action Area are listed in Table 1.

Table 1 ESA-Listed Species and Critical Habitat in the Action Area

Common Name	Scientific Name	ESA Status	Critical Habitat in Action Area?
U.S. Fish and Wildlife Service			
Spectacled Eider	*Somateria fischeri*	Threatened	No
Steller's Eider	*Polysticta stelleri*	Threatened	No
Polar Bear	*Ursus maritimus*	Threatened	Yes
Northern Sea Otter	*Enhydra lutris*	Threatened	Yes
Short-Tailed Albatross	*Phoebastria albatrus*	Endangered	No
National Marine Fisheries Service			
Blue Whale	*Balaenoptera musculus*	Endangered	No
Bowhead Whale	*Balaena mysticetus*	Endangered	No
Fin Whale	*Balaenoptera physalus*	Endangered	No
Grey Whale	*Eschrichtius robustus*	Endangered	No
Humpback Whale	*Megaptera novaeangliae*	Threatened	Yes
		Endangered	Yes
North Pacific Right Whale	*Eubalaena japonica*	Endangered	Yes
Sei Whale	*Balaenoptera borealis*	Endangered	No
Sperm Whale	*Physeter macrocephalus*	Endangered	No
Arctic Ringed Seal	*Phoca hispida*	Threatened	Yes
Bearded Seal	*Erignathus barbatus*	Threatened	No
Steller Sea Lion	*Eumetopias jubatus*	Endangered	Yes

Key:
DPS – Distinct Population Segments
ESA – Endangered Species Act

3.1 Spectacled Eider, *Somateria fischeri*

3.1.1 Population

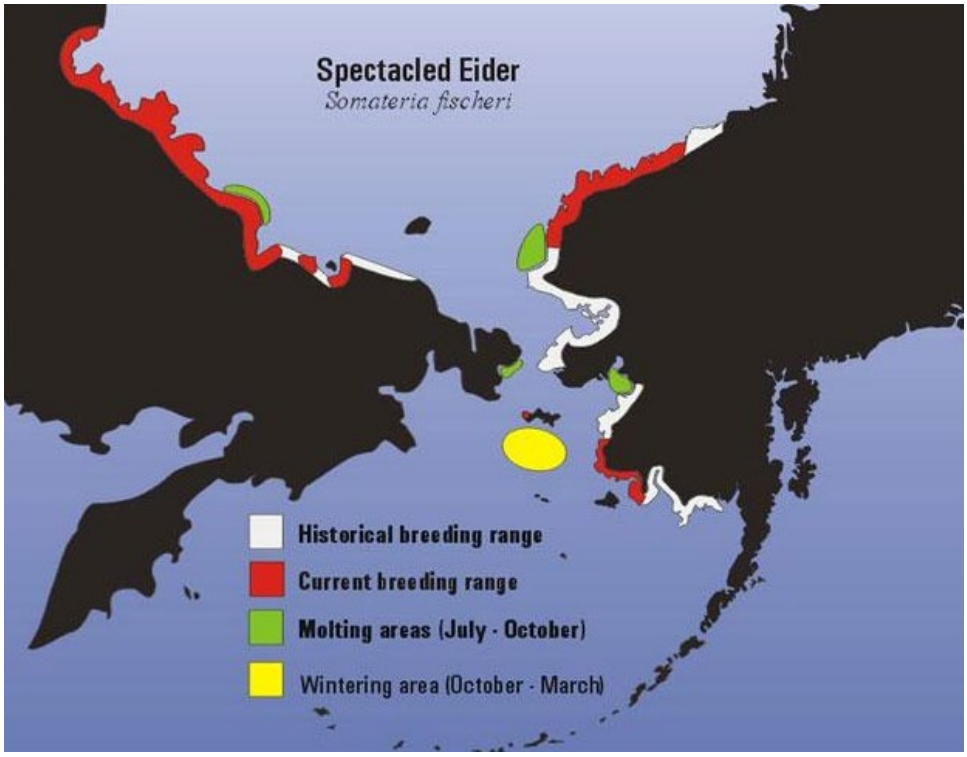
Spectacled eiders are listed as threatened and are known to occur in three populations based on summer nesting localities: Yukon-Kuskokwim Delta, Arctic Coastal Plain or North Slope of Alaska, and Arctic Coastal Plain of Russia (USFWS 2021a). Individuals from the Arctic Coastal Plain of Alaska population are most likely to occur in the vicinity of the Proposed Action.

3.1.2 Distribution

Spectacled eiders spend most of the winter on marine waters and nest during the summer on coastal tundra, north of the project (USFWS 2021a). Nearly all Alaskan spectacled eiders breed on the North Slope, and then move to offshore/nearshore waters to molt north of the project

area (USFWS 2001). After molting, eiders migrate to winter offshore marine areas in the central Bering Sea south of St. Lawrence Island.

Figure 3 Spectacled eider range



From: https://www.fws.gov/alaska/pages/endangered-species/spectacled-eider

3.1.3 Habitat

Spectacled eiders are primarily marine diving ducks that feed on bottom-dwelling mollusks and crustaceans. During pre-nesting and nesting, spectacled eiders in the North Slope occupy large shallow lakes or small islands with emergent vegetation (USFWS 2001).

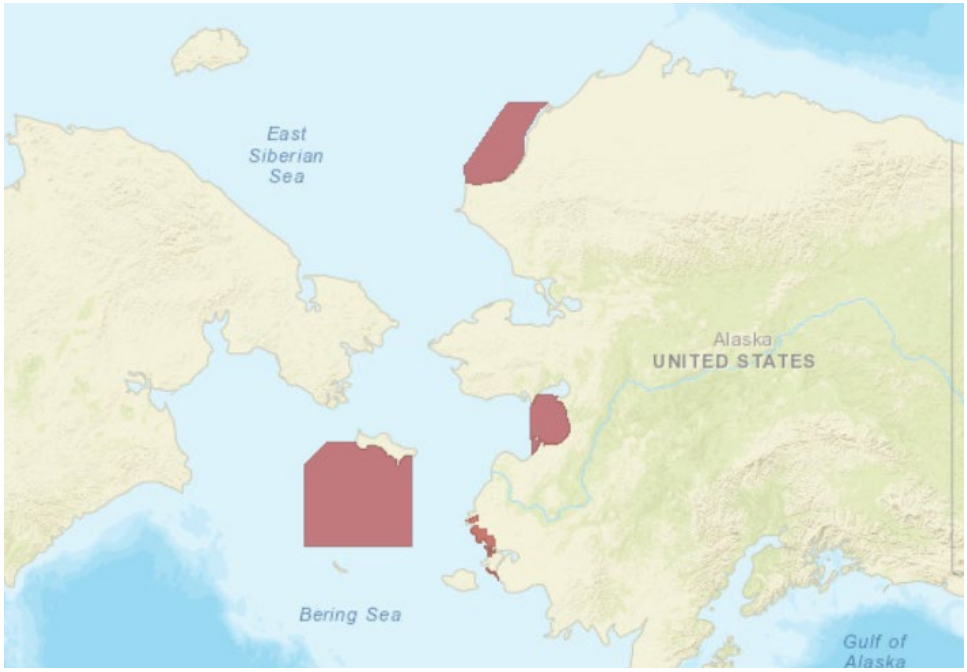
Eiders are most likely to be encountered in the Action Area as they seasonally migrate through the region, between southerly wintering areas and northern molting/breeding areas (USFWS 2021a). Eiders could also be present in the Action Area during any ice-free conditions, where individuals can forage, or rest.

3.1.4 Critical Habitat

No critical habitat is designated in the vicinity of the project.

Critical habitat is designated for spectacled eiders away from the Action Area (Yukon-Kuskokwim Delta, Norton Sound, Ledyard Bay, and the Bering Sea [USFWS 2001]). No activities are anticipated to occur in spectacled eider critical habitat.

Figure 4 Spectacled eider critical habitat



From: https://ecos.fws.gov/ecp/species/762

3.2 Steller's Eider, *Polysticta stelleri*

3.2.1 Population

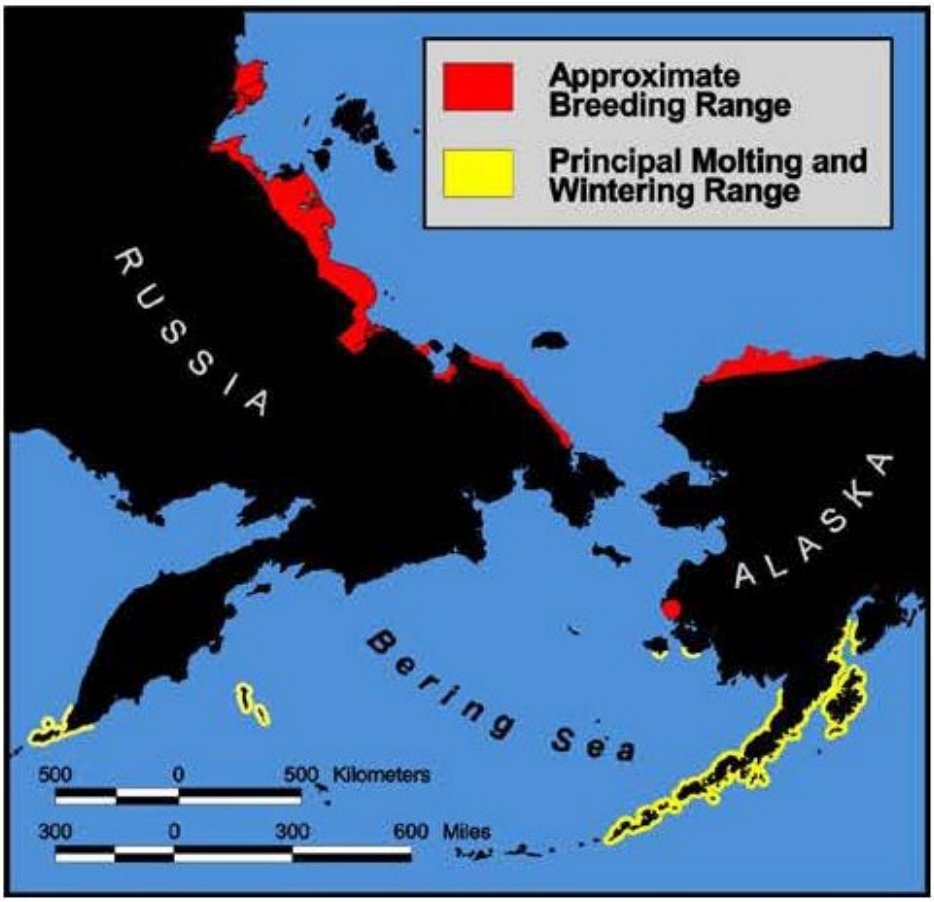
Steller's eiders are listed as threatened. The Pacific Ocean population breeds primarily in eastern Siberia, but several hundred individuals' nest near Utqiagvik (Barrow) (Fredrickson 2001, USFWS 2021b). These populations winter in the Pacific Ocean, with the Alaskan winter range spanning from the Aleutians to Cook Inlet.

3.2.2 Distribution

Little is known about the distribution of Steller's eider. The Alaskan summer nesting population is located near Utqiagvik (Barrow) (USFWS 2021b).

A western Alaska subpopulation occurred on the Yukon-Kuskokwim Delta, but since 1970, only 11 nests have been reported from a few locations on the Yukon-Kuskokwim Delta (USFWS 1997, 2021b).

Figure 5 Steller's eider range



From: https://ecos.fws.gov/docs/recovery_plan/020930b.pdf

3.2.3 Habitat

Steller's eider are primarily marine waterfowl, and feed on marine invertebrates by diving for them underwater (USFWS 2021b). During winter, Steller's eiders concentrate along the Alaska Peninsula from the eastern Aleutian Islands to southern Cook Inlet in shallow near-shore marine waters (USFWS 1997).

In the breeding season, Steller's eiders nest in the tundra near shallow ponds or drained lake basins in the Arctic tundra, north of the project (USFWS 1997; 2021b). After breeding, they move to nearshore marine waters to molt and winter, north of the project (USFWS 2021b).

Eiders are most likely to be encountered in the Action Area as they seasonally migrate through the region, between southerly wintering areas and northern breeding areas. Non-breeding eiders could also be present in the Action Area during any ice-free conditions, where individuals can forage, or rest.

3.2.4 Critical Habitat

No critical habitat is designated in the vicinity of the project.

Critical habitat is designated away from the Action Area (Yukon-Kuskokwim Delta, Southwest Alaska [66 FR 8850 8884]). These areas are not near the baring route or port dredging activities.

3.3 Polar Bear, *Ursus maritimus*

3.3.1 Population

Polar bears are listed as a threatened species. The species is circumpolar and occurs in several stocks. Individuals in the project area may belong to the Chukchi/Bering Sea stock and/or the Southern Beaufort Sea stock. Individuals have large ranges, with extensive movements, and population boundaries overlap.

3.3.2 Distribution

The best available information on polar bear presence and habitat in the Action Area is:

- Durner et al. (2020) documented polar bear dens between 1910 and 2010.
- The U.S. Geological Survey (USGS 2018) documented polar bear dens between 1986 and 2013.
- Regehr et al. (2018) conducted helicopter polar bear capture, using the port facilities as a base, to offshore stable sea ice (outside the Action Area) in 2008–2011, 2013, and 2015–2016. The models from this study found that polar bears did not concentrate in the Action Area (Regehr et al. 2018).
    - This support was recognized by the USFWS with Endangered Species Act 2017 Recovery Champion award to Teck.
- Rode (2015) compiled polar bear location data from bears tagged between 1985 and 1996.

None of these sources had entries for polar bears within 16 km (10 mi) of the project.

In discussions with environmental staff who work at the port, none were aware of a polar bear ever being seen in the area of the port.

Figure 6 Polar Bear Range and Subpopulations

From:
https://ecos.fws.gov/docs/recovery_plan/PBRT%20Recovery%20Plan%20Book.FINAL.signed.pdf

3.3.3 Habitat

Polar bear habitat is directly linked to sea ice. The sea ice provides a platform for movement, hunting, and resting. Sea ice also supports their primary prey, including ringed seals (USFWS 2010a).

Traditionally, polar bears summer on the offshore pack ice, and spend fall, winter, and spring along the coasts and the boundary between sea ice and water. Recent changes in summer sea ice distribution, and the introduction of anthropogenic food sources, have caused some polar bears to shift to summering along the coast (Atwood et al. 2016).

Pregnant females are particularly sensitive to disturbance. They spend the winter denning, and coastal barrier islands can be particularly highly valued habitat. As a result, denning habitat along the coast is particularly protected during the spring, summer, and fall (see critical habitat section below) (USFWS 2010a).

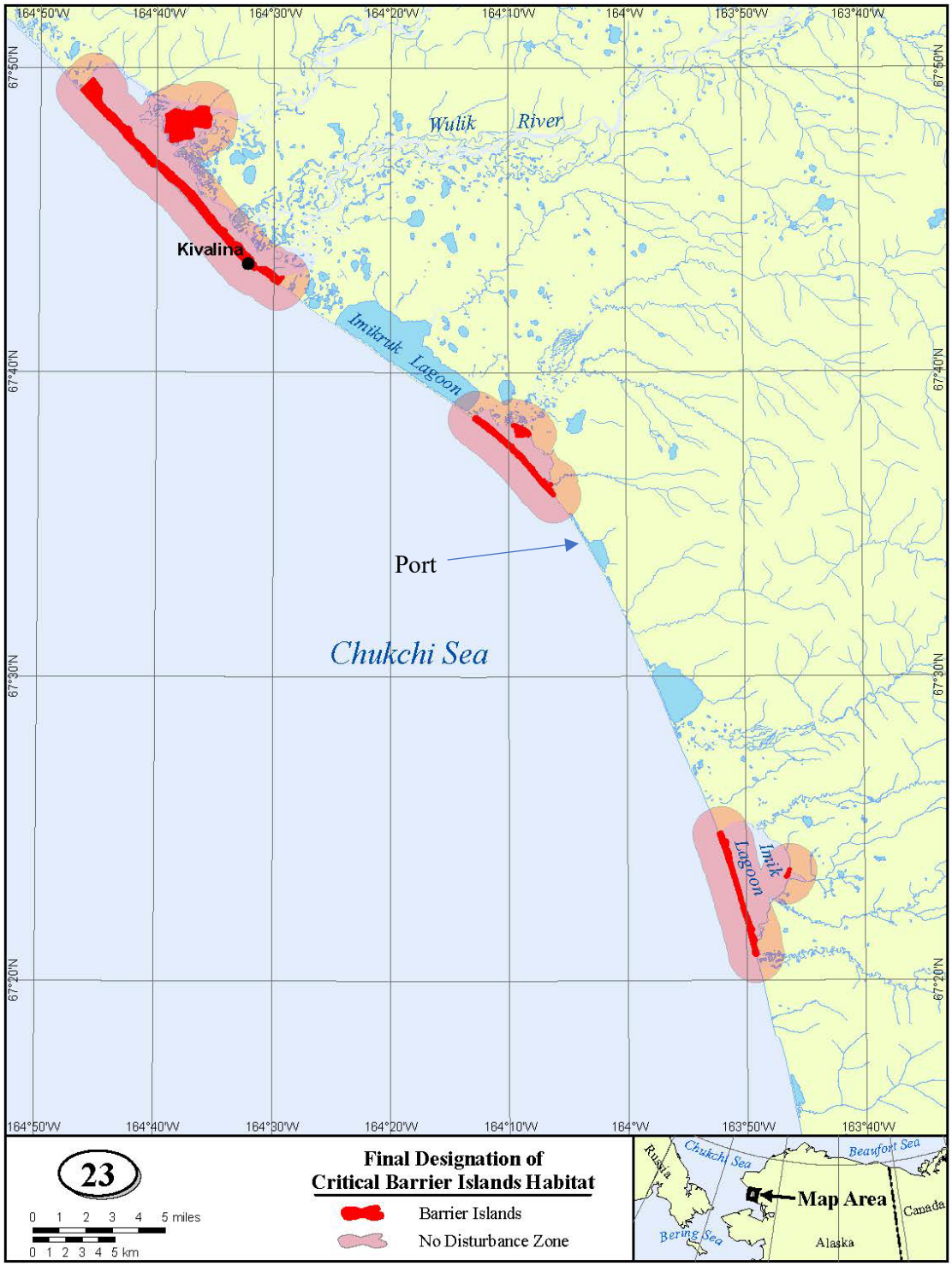
3.3.4 Critical Habitat

Three habitat elements were described in the FR notice designating critical habitat for polar bears:

- Sea ice habitat used for feeding, breeding, denning, and movements, which is sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf with adequate prey resources (primarily ringed and bearded seals) to support polar bears.
- Terrestrial denning habitat, which includes topographic features, such as coastal bluffs and riverbanks, with suitable macrohabitat characteristics. Suitable macrohabitat characteristics are:
    - Steep, stable slopes (range 15.5 to 50.0 degrees), with heights ranging from 1.3 to 34 m (4.3 to 111.6 ft), and with water or relatively level ground below the slope and relatively flat terrain above the slope.
    - Unobstructed, undisturbed access between den sites and the coast.
    - Sea ice in proximity of terrestrial denning habitat prior to the onset of denning during the fall to provide access to terrestrial den sites.
    - The absence of disturbance from humans and human activities that might attract other polar bears.
- Barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat. This includes all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the U.S., and the water, ice, and terrestrial habitat within 1.6 km (1 mi) of these islands (no-disturbance zone).

The port is adjacent to designated areas of polar bear barrier island critical habitat. As a result, this report has included polar bear critical habitat. There is no barrier island at the port.

Figure 7 Polar Bear Critical Habitat near the port



From: https://www.fws.gov/r7/fisheries/mmm/polarbear/final_designation_maps/99-0207.pdf

3.4 Northern Sea Otter, *Enhydra lutris*

3.4.1 Population

The northern sea otter population listed as threatened under the Endangered Species Act is the southwest population. Sea otters in the southcentral Alaska and southeastern Alaska stocks are not listed under the Endangered Species Act.

3.4.2 Distribution

Sea otters are distributed throughout coastal Alaska and Washington. The Southwest population spans from Attu Island to Western Cook Inlet, including Bristol Bay, the Kodiak Archipelago, and the Barren Islands.

Figure 8 Northern Sea Otter Range

From: https://ecos.fws.gov/ecp/species/2884

3.4.3 Habitat

Sea otter distribution has shifted toward the shoreline, potentially as an escape mechanism from predators (USFWS 2005). USFWS designated critical habitat adjacent to shorelines throughout Southwestern Alaska and the Aleutians to help protect the species, and specific habitat characteristics are summarized below in the critical habitat section.

Sea otters are most likely to be encountered in the Action Area during barge transit between Juneau and the port.

3.4.4 Critical Habitat

Four habitat elements were described in the FR notice designating critical habitat for the southwestern Alaska population (USFWS 2005):

1. Shallow, rocky areas where marine predators are less likely to forage, which are waters less than 2 m (6.6 ft) in depth;
2. Nearshore waters that may provide protection or escape from marine predators, which are those within 100 m (328.1 ft) from the mean high tide line;
3. Kelp forests that provide protection from marine predators, which occur in waters less than 20 m (65.6 ft) in depth; and
4. Prey resources within the areas identified by Primary Constituent Elements 1, 2, and 3 that are present in sufficient quantity and quality to support the energetic requirements of the species.

Northern sea otter critical habitat is so fine scale, it spans many map pages. Critical habitat maps depicting protected habitat in Southwest Alaska are most accessible from this link: https://www.fws.gov/r7/fisheries/mmm/seaotters/pdf/SeaOtterCriticalHabitatMaps.pdf.

The Proposed Action includes conservation measures to completely avoid entering Northern sea otter critical habitat.

3.5 Short-Tailed Albatross, *Phoebastria albatrus*

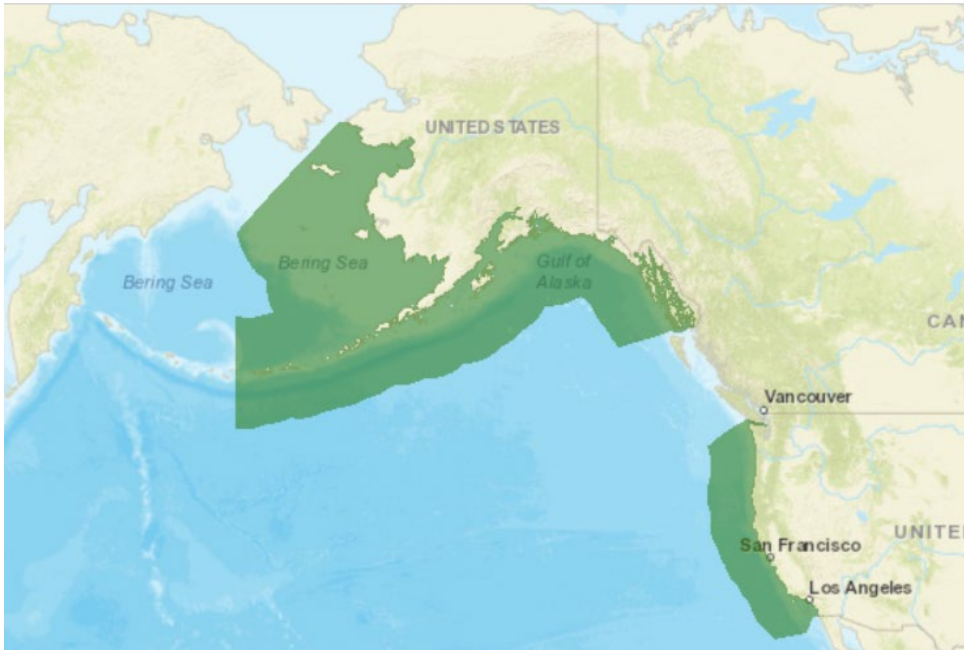
3.5.1 Population

Short-tailed albatross are listed as endangered wherever they are found. There is only one population of short-tailed albatross.

3.5.2 Distribution

Short-tailed albatross' breeding is restricted to two remote islands in the western Pacific Ocean (Japan/China, USFWS 2008). The largest threat to the species is the volcanic activity of one of those islands (USFWS 2008). When not breeding, the albatrosses spend much of the rest of their lives feeding in marine waters.

Figure 9 Short-Tailed Albatross Range



From: https://ecos.fws.gov/ecp/species/433

3.5.3 Habitat

Adult short-tailed albatross' live and feed in the marine waters of the Pacific Ocean, above the continental shelf and shelf break areas (0-200 m deep) in the Bering Sea, Aleutians, Japanese, and Russian waters (USFWS 2008).

Albatrosses are most likely to be encountered in the Action Area during barge transit between Juneau and the port.

3.5.4 Critical Habitat

No critical habitat is designated in the vicinity of the project.

3.6 Blue Whale, *Balaenoptera musculus*

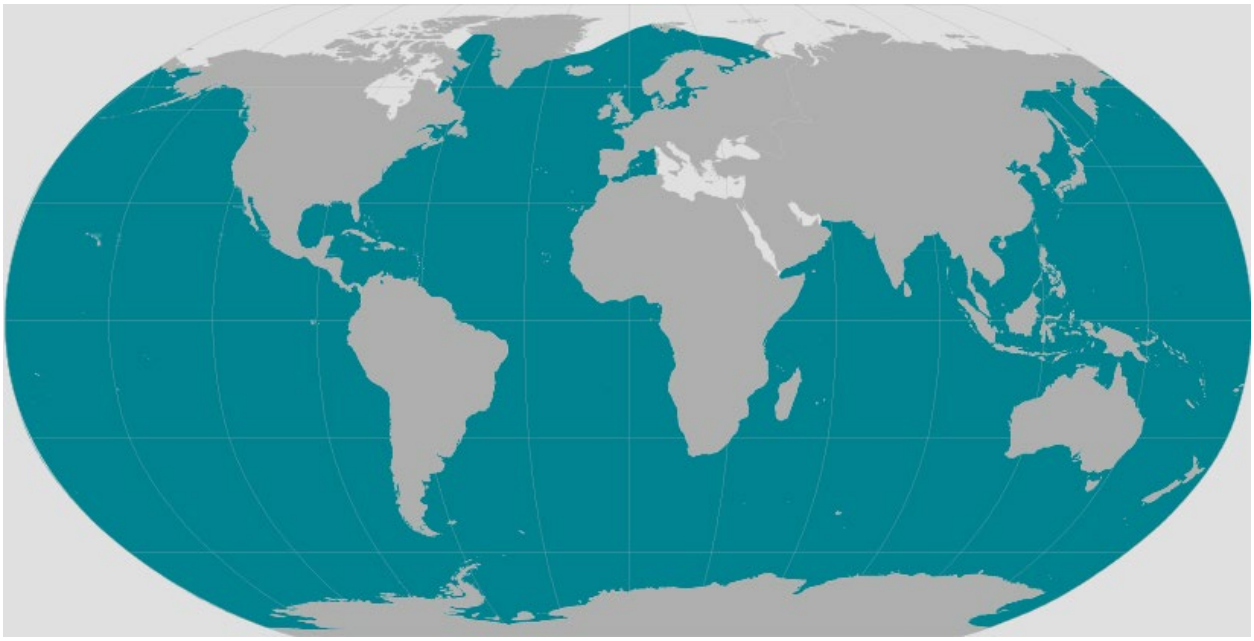
3.6.1 Population

Two populations of blue whale exist in the North Pacific, the Eastern North Pacific, and Central North Pacific (NMFS 2018b, 2020a). Both are listed as endangered.

3.6.2 Distribution

During the summer, blue whales are distributed throughout the Gulf of Alaska, Aleutians, and Northern Pacific (NMFS 2018b, 2020a). During winter breeding, they can segregate into concentration areas along the west coast of the continental United States and/or Hawaii (NMFS 2018b, 2020a).

Figure 10 Blue Whale Range



From: https://www.fisheries.noaa.gov/species/blue-whale

3.6.3 Habitat

Blue whales are the largest marine mammal, and feed on krill throughout the North Pacific Ocean. They migrate north in the summer to take advantage of the blooms of aquatic biomass in northern latitudes.

Blue whales are most likely to be encountered in the Action Area during barge transit between Juneau and the port.

3.6.4 Critical Habitat

No critical habitat is designated in the vicinity of the project.

3.7 Bowhead Whale, *Balaena mysticetus*

3.7.1 Population

The population of bowhead whales in the vicinity of the project are the Western Arctic stock (NMFS 2019b). Bowhead whales are listed as endangered under the Endangered Species Act.

3.7.2 Distribution

Bowhead whales have highly seasonal movements. The Western Arctic stock winters in the southwestern Bering Sea, feeding near the sea ice edge (NMFS 2019b).

In spring as the sea ice begins to melt, bowheads follow early polynyas (i.e., stretches of open water in sea ice, often in nearshore waters) in the sea ice north (NMFS 2019b). Populations

migrate north, to feed in the Chukchi and Beaufort Sea off the coast of Alaska and Canada (NMFS 2019b). There they feed and calve, migrating south again in the fall, and finally back into the Bering Sea to winter as pack ice extends over the Arctic (NMFS 2019b).

Figure 11 Bowhead Whale Range

From: https://www.fisheries.noaa.gov/species/bowhead-whale

3.7.3 Habitat

Bowhead whales are found throughout the circumpolar Arctic. They feed on plankton and have historical feeding areas distributed throughout the Chukchi and Beaufort Sea (NMFS 2019b).

Bowhead whales could be found in the Action Area whenever there is ice free water. They may be particularly sensitive in early spring, when sea ice is just melting, and bowheads are following open water leads past the Action Area during northern migration.

3.7.4 Critical Habitat

No critical habitat has been designated.

3.8 Fin Whale, *Balaenoptera physalus*

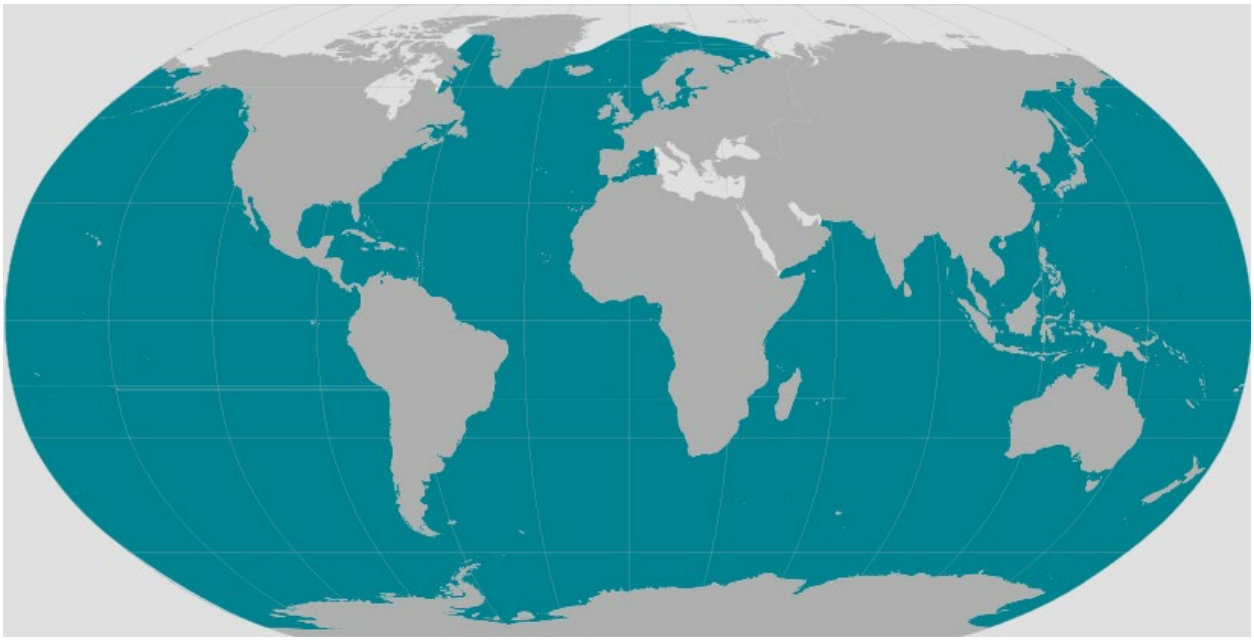
3.8.1 Population

Fin whale stocks are primarily defined on winter southern breeding areas, and include the Hawaii, Northeast Pacific, and California/Oregon/Washington stocks (NMFS 2018c, 2019c,d). Population definition of individuals on Alaskan summer waters is poorly understood, and fin whales are the most common whale sighted on Bering Sea shelf surveys (NMFS 2018c, 2019c,d). For this analysis, all three stocks are included in the potential stocks. Fin whales are listed as endangered under the Endangered Species Act.

3.8.2 Distribution

Fin whales are broadly distributed in the Pacific Ocean, and their distribution is not well known (NMFS 2018c, 2019c,d). Fin whale movements may be individually based, with annual differences in age, weather, and climate. Fin whales winter in southern equatorial locations and migrate to Alaskan waters to feed during the summer. Historically, whaling records indicate their range included the Chukchi and Beaufort Seas (NMFS 2018c, 2019c,d).

Figure 12 Fin Whale Range



From: https://www.fisheries.noaa.gov/species/fin-whale

3.8.3 Habitat

Fin whales are large cetaceans that prey on shrimp, copepods, and schooling fish.

Fin whales could be found in the Action Area when there is ice free water.

3.8.4 Critical Habitat

No critical habitat has been designated.

3.9 Grey Whale, *Eschrichtius robustus*

3.9.1 Population

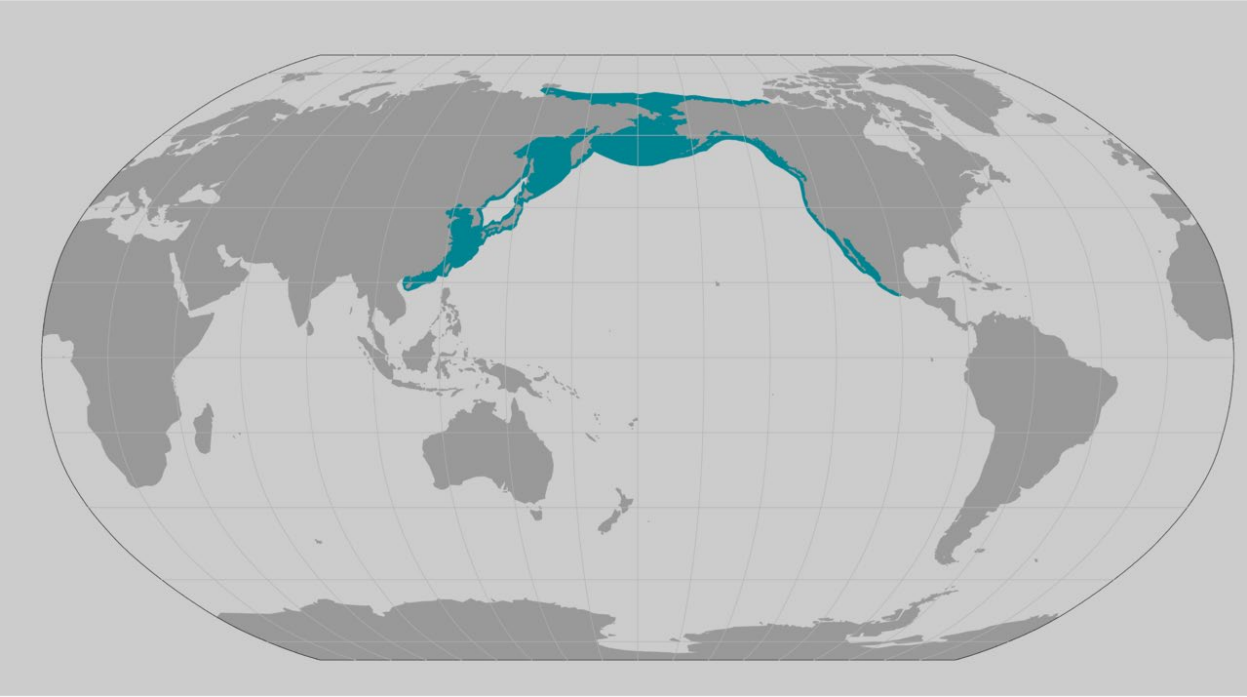
The Western North Pacific DPS is listed as an endangered species. NMFS divides the gray whale population into the western North Pacific and eastern North Pacific stocks (NMFS 2019e,f).

3.9.2 Distribution

The Action Area only intersects with the range of the eastern North Pacific DPS, which includes all of Alaska and the western United States. These whales feed in the Bering and Chukchi Sea during the summer and fall (NMFS 2019e,f). Grey whales winter in waters off California and Mexico, where they breed.

The endangered population is the western North Pacific DPS, which occurs in Russia, Japan, and Korea. Individual whales have been documented to occur in both populations, so the species is analyzed in this report (NMFS 2019e,f).

Figure 13 Grey Whale Range



From: https://www.fisheries.noaa.gov/species/gray-whale

3.9.3 Habitat

Grey whales are bottom feeders, feeding on the benthic and epi-benthic environment. They live in coastal waters along the west coast of the North America and the east coast of Asia. Summer habitat includes the Chukchi Sea, Bering Sea, Aleutians, and Gulf of Alaska (NMFS 2019e,f).

Grey whales are most likely to be encountered in the Action Area both in the vicinity of the port dredging and during barge transit between Juneau and the port.

3.9.4 Critical Habitat

No critical habitat is designated in the vicinity of the project.

3.10 Humpback Whale, *Megaptera novaeangliae*

3.10.1 Population

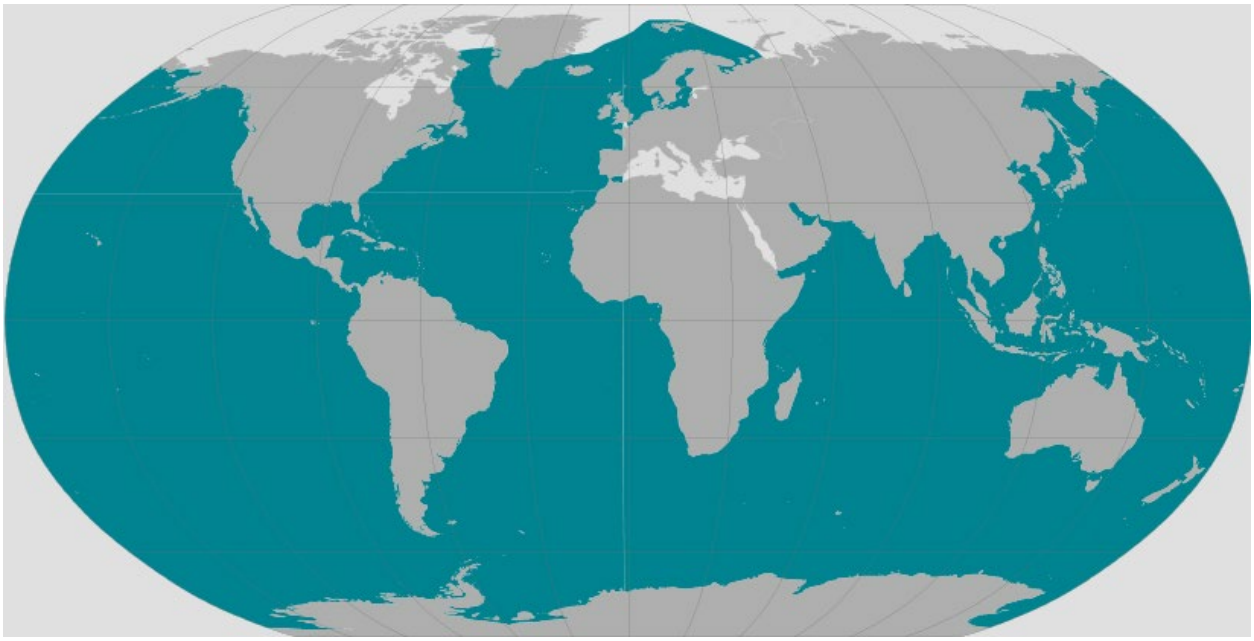
Humpback whales are widely distributed in the Pacific Ocean. The NMFS (2019g,h) stock assessment reports state that the DPSs are being reexamined, but the most likely population in the Action Area are the Central North Pacific Stock and Western North Pacific Stock.

NMFS designated critical habitat for the humpback whale on April 21, 2021 (86 FR 21082). In that FR Notice, they describe 4 DPSs as endangered, 1 as threatened, and 9 as not eligible for listing. Those listed as occurring in Alaska include Western North Pacific, and Mexico. We follow that classification for this report. Humpback whales are listed as both endangered and threatened under the Endangered Species Act.

3.10.2 Distribution

Humpback whales are seasonal migrants, visiting the Alaskan waters in the Action Area during the summer ice-free season. They typically utilize the rich waters of the Chukchi and Beaufort Seas for feeding, and over winter and conduct breeding activities in tropical climates (e.g., waters of the coasts of Hawaii and Mexico).

Figure 14 Humpback Whale Range



From: https://www.fisheries.noaa.gov/species/humpback-whale

3.10.3 Habitat

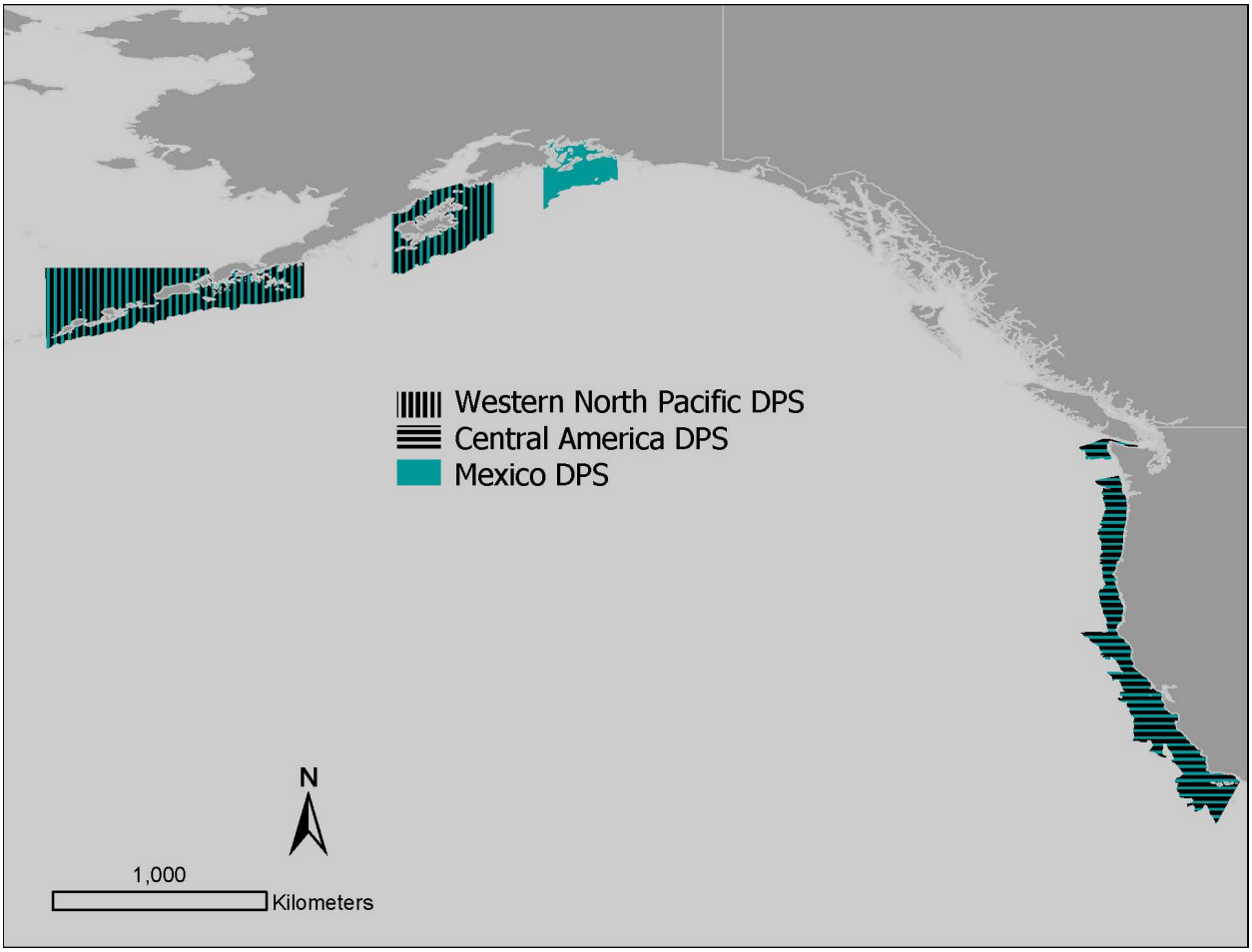
Humpback whales are primarily pelagic animals, and feed on herring, capelin, and other small marine fish species. The critical habitat (below) was described based on concentrations of prey species, and humpback whales are known to concentrate near food sources (86 FR 21082).

Humpback whales could be found in the Action Area when there is ice free water.

3.10.4 Critical Habitat

Humpback whale critical habitat was designated on April 21, 2021 (86 FR 21082). NMFS states that the critical habitat was designated primarily because it hosts prey species utilized by humpback whales (86 FR 21082). All critical habitat is south of the dredging for this project (e.g., Kodiak Island, Aleutian Islands), but is within the barge transportation route between Juneau and the project. NMFS states repeatedly in the final rule designating critical habitat that individual vessel traffic is not anticipated to impact humpback whale critical habitat (86 FR 21082).

Figure 15 Humpback Whale Critical Habitat



From: https://www.fisheries.noaa.gov/resource/map/humpback-whale-critical-habitat-maps-and-gis-data

3.11 North Pacific Right Whale, *Eubalaena japonica*

3.11.1 Population

The North Pacific right whale is considered endangered throughout its range. Right whales are considered to have one Pacific Ocean population (NMFS 2019i).

3.11.2 Distribution

Right whales were widely distributed but were hunted to the extent that they are extremely rare. Right whale habitat in the Pacific Ocean is considered to be throughout the Gulf of Alaska, Bering Sea, and southerly, down into more temperate waters. Similar to many whales, they spend their summers in higher latitudes, and winter in the more temperate seas south of the project.

Right whales have been sighted multiple times in their critical habitat in the Bering Sea (described below).

Figure 16 North Pacific Right Whale Range

From: https://www.fisheries.noaa.gov/species/north-pacific-right-whale

3.11.3 Habitat

Little is known about right whale habitat. NMFS designated right whale habitat based on "species of large zooplankton in areas where right whale are known or believed to feed (NMFS 2008)."

No calving grounds are known in the Pacific Ocean.

Right whales are most likely to be encountered in the Action Area both in the vicinity of the port dredging and during barge transit between Juneau and the port.

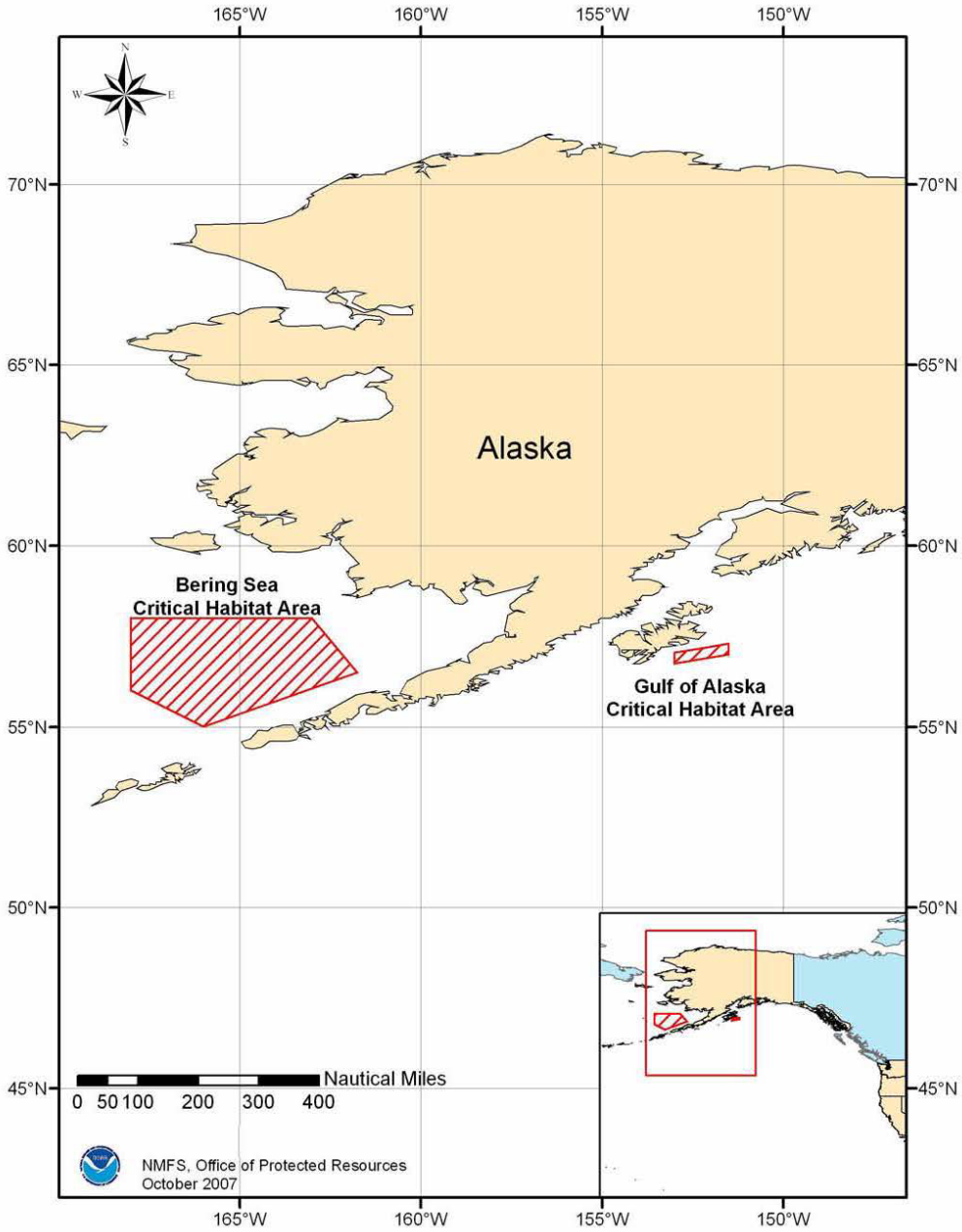
3.11.4 Critical Habitat

Critical habitat has been designated in two locations along the barge transportation route between Juneau and the project (NMFS 2008):

- Southeast of Kodiak Island
- Southeastern Bering Sea

No critical habitat exists in the vicinity of the dredging for the project.

Figure 17 North Pacific Right Whale Critical Habitat



From: https://media.fisheries.noaa.gov/dam-migration/northpacificrightwhale.pdf

3.12 Sei Whale, *Balaenoptera borealis*

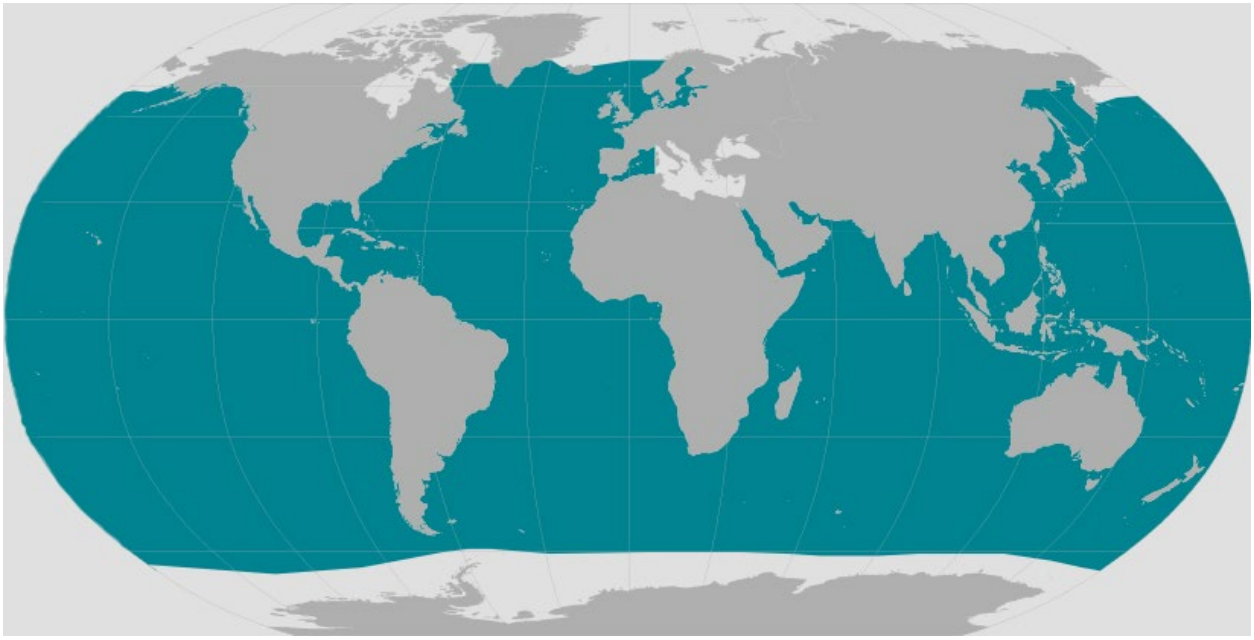
3.12.1 Population

Sei whales are listed as endangered throughout their range. Two stocks, Hawaii, and Eastern North Pacific may occur in the Action Area (NMFS 2018d, 2019k).

3.12.2 Distribution

Sei whales are widespread throughout the temperate and equatorial marine waters of the world. In the Action Area, they occur in the Gulf of Alaska, Aleutians, and southern Bering Sea. NMFS (2019k) states sei whales are rare in coastal waters. Similar to other species, they appear to summer in northern waters, taking advantage of the Arctic productivity bloom, and winter in warmer latitudes (NMFS 2018d, 2019k).

Figure 18 Sei Whale Range



From: https://www.fisheries.noaa.gov/species/sei-whale

3.12.3 Habitat

Sei whales have unpredictable occurrences and may occupy one location and then not return for years or decades (NMFS 2020b). They prefer deep water, and feed on plankton, small fish, and cephalopods.

Sei whales are most likely to be encountered in the Action Area both in the vicinity of the port dredging and during barge transit between Juneau and the port.

3.12.4 Critical Habitat

No critical habitat is designated for the sei whale.

3.13 Sperm Whale, *Physeter macrocephalus*

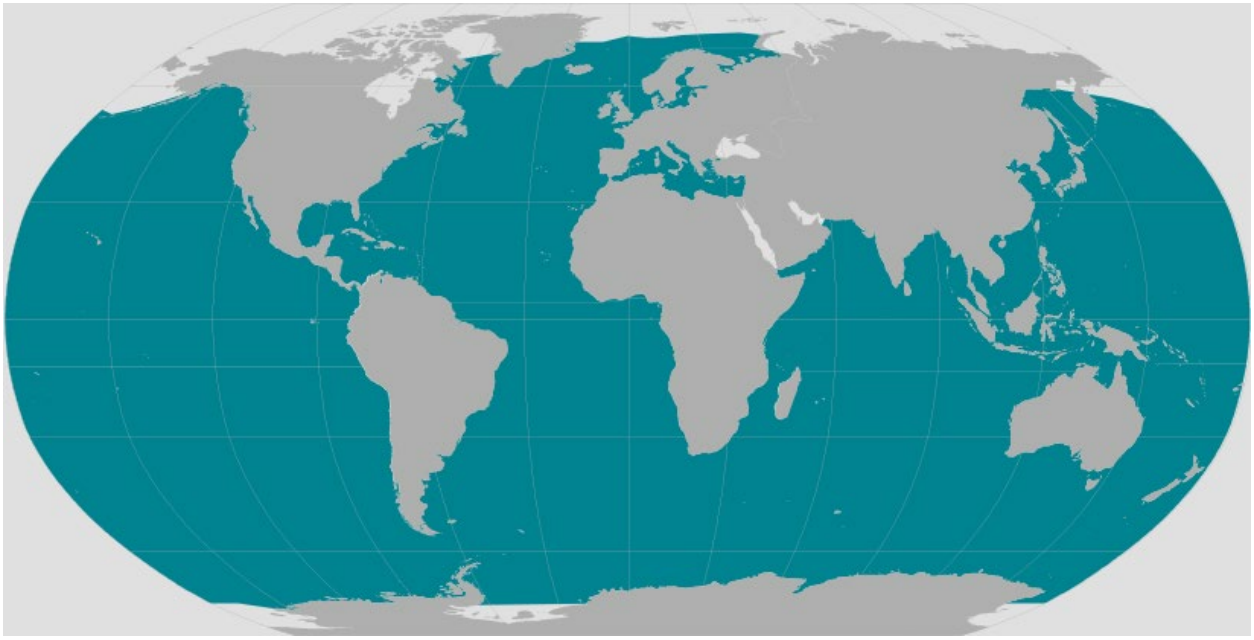
3.13.1 Population

Sperm whales are endangered throughout their range, and NMFS recognizes three stocks of sperm whales in the North Pacific: North Pacific, California/Washington/Oregon, and Hawaii (NMFS 2018e, 2019l, 2020c).

3.13.2 Distribution

Sperm whales are widely distributed, but individuals from all three stocks may be present in the Bering Sea during the summer (NMFS 2018e, 2019l, 2020c). They separate into different winter stocks, whose preferred locations are referenced in the stock names. Some individuals may be seen all year long in the traditional winter grounds.

Figure 19 Sperm Whale Range



From: https://www.fisheries.noaa.gov/species/sperm-whale

3.13.3 Habitat

Sperm whales are predators, feeding on squids, sharks, and fish (NMFS 2019l). Surveys have found them to be the most frequent whale sighted in the central and western Aleutian Islands (NMFS 2019l). Similar to other whales, they appear to winter in temperate locations, and summer in the Bering Sea, with twice as many sperm whales detected in the Gulf of Alaska during the summer vs winter (NMFS 2019l)

Sperm whales are most likely to be encountered in the Action Area both in the vicinity of the port dredging and during barge transit between Juneau and the port.

3.13.4 Critical Habitat

No critical habitat is designated for sperm whales.

3.14 Arctic Ringed Seal, *Phoca hispida*

3.14.1 Population

Ringed seals are listed as threatened and have been divided into five subspecies, with the Arctic subspecies being the only one listed under the ESA in the vicinity of the Proposed Action (86 FR 1452).

3.14.2 Distribution

Ringed seals are circumpolar and tightly linked with sea ice (NMFS 2019j). Ringed seals create their own breathing holes in waters that are completely ice covered. Most ringed seals migrate with the pack ice and sea ice edge, ranging south into the Bering Sea during winter, and throughout the Chukchi Sea in the summer. They use the sea ice for resting, but in the summer may haul out onshore in ice free waters. High concentrations have been noted between Kivalina and Kotzebue, in the vicinity of the project (Bengtson et al 2005).

Figure 20 Ringed Sea Range

From: https://www.fisheries.noaa.gov/species/ringed-seal

3.14.3 Habitat

Ringed seals are most closely associated with sea ice; therefore, are most likely to be present near the project during the winter (NMFS 2019j). During ice free periods, individual ringed seals may be present, hunting or hauled out along the shoreline.

Ringed seals use winter sea ice to make lairs for birthing and raising pups. These habitats are generally in waters greater than 2 m (6 ft) deep (86 FR 1452).

Ringed seals may be present in the Action Area during any season.

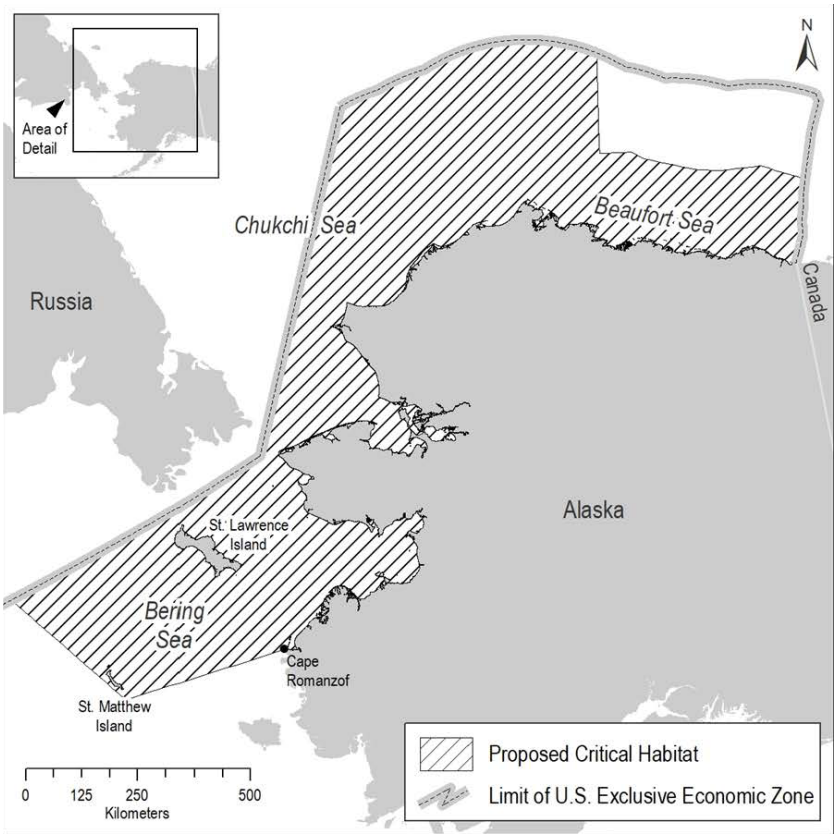
3.14.4 Critical Habitat

In December 2014, critical habitat for Arctic ringed seals was proposed that includes all the contiguous marine waters from the coastline of Alaska to 370 km (200 nm) offshore (i.e., within the U.S. Exclusive Economic Zone) (NMFS 2014).

On March 9, 2021, a proposed rule revising the proposed critical habitat was published (NMFS 2021a). Proposed habitat includes the project area, for marine areas with these essential features:

- Snow-covered sea ice habitat suitable for the formation and maintenance of subnivean birth lairs used for sheltering pups during whelping and nursing, which is defined as areas of seasonal landfast (shorefast) ice and dense, stable pack ice, excluding any bottom-fast ice extending seaward from the coastline (typically in waters less than 2 m deep), that have undergone deformation and contain snowdrifts of sufficient depth, typically at least 54 cm deep.
- Sea ice habitat suitable as a platform for basking and molting, which is defined as areas containing sea ice of 15 percent or more concentration, excluding any bottom-fast ice extending seaward from the coastline (typically in waters less than 2 m deep).
- Primary prey resources to support Arctic ringed seals, which are defined to be Arctic cod (*Boreogadus saida*), saffron cod (*Eleginus gracilis*), shrimps, and amphipods.

Figure 21 Ringed Seal Proposed Critical Habitat



From: https://media.fisheries.noaa.gov/2021-02/arctic-ringed-seal-revised-proposed-CH-map-EFs.pdf?null=

3.15 Bearded Seal, *Erignathus barbatus*

3.15.1 Population

Bearded seals are listed as threatened and have been divided into Beringia and Okhotsk DPS, with Beringia being the only DPS in the vicinity of the project.

3.15.2 Distribution

Bearded seals are highly migratory, following the seasonal changes in sea ice, with movement patterns between the Bering Sea (winter) and Chukchi Sea (summer) (NMFS 2019a). They raise pups on the sea ice and most prefer to remain offshore (over 37 km [20 nautical miles] from shore). Some individuals leave the pack ice during the summer and visit coastal waters, lagoons, and rivers. High concentrations have been noted between Kivalina and Kotzebue, in the vicinity of the project (NMFS 2019a, Bengtson et al 2005).

Figure 22 Bearded Seal Range

From: https://www.fisheries.noaa.gov/species/bearded-seal

3.15.3 Habitat

Bearded seals are most closely associated with the pack ice (NMFS 2019a). They use the ice to rest while foraging in the benthic environment generally less than 200 m (650 ft) deep. Individuals can remain near coasts during the summer to forage and utilize local food sources.

Bearded seals may be present in the Action Area during any season.

3.15.4 Critical Habitat

No critical habitat has been designated.

3.16 Steller Sea Lion, *Eumetopias jubatus*

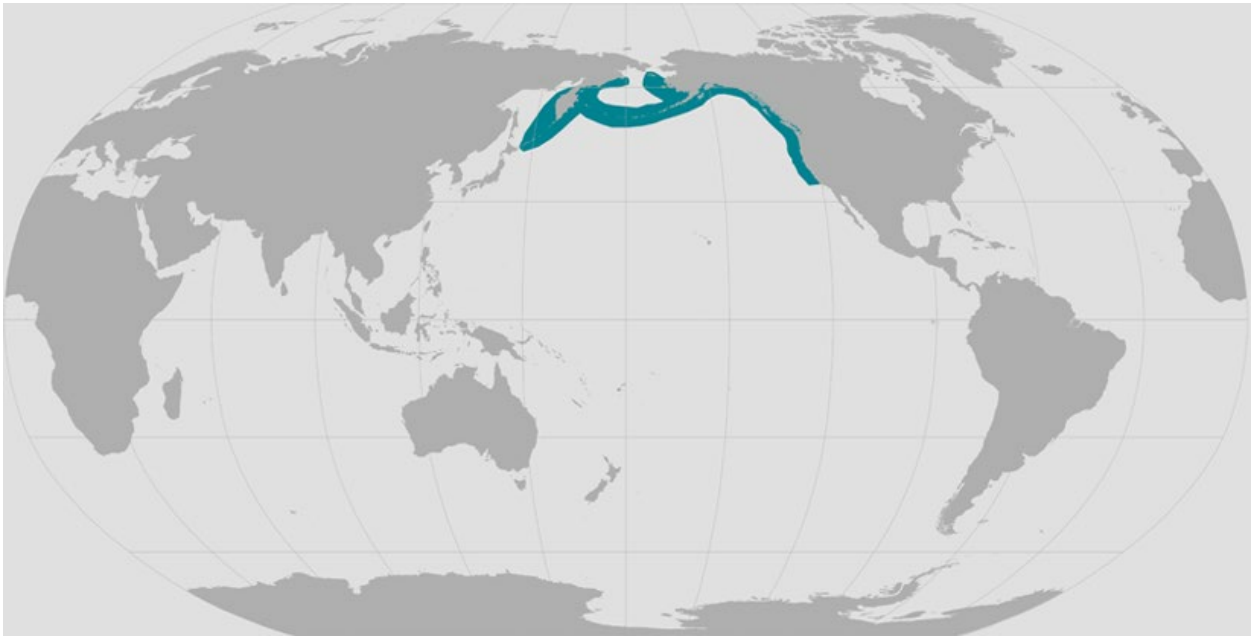
3.16.1 Population

NMFS recognizes two populations of Steller sea lions in the Action Area, the endangered Western DPS, and the delisted Eastern DPS (NMFS 2020d,e). The delineation boundary is split at the 144º West latitude (e.g., east of Prince William Sound) but there is exchange between the stocks.

3.16.2 Distribution

Steller sea lions occur throughout Alaskan waters. They breed and haul out on terrestrial rookeries and are not associated with sea ice (NMFS 2020d,e). Outside of the breeding season, individuals can have large ranges in the Bering Sea and coastal Gulf of Alaska, traveling to take advantage of concentrations of food.

Figure 23 Steller Sea Lion Range



From: https://www.fisheries.noaa.gov/species/steller-sea-lion

3.16.3 Habitat

Steller sea lion use terrestrial haulouts and rookeries throughout the Aleutians, Southcentral, and Southeastern Alaska (58 FR 45269). From these resting locations, they travel long distances to feed, from the Bering Sea to southeast Alaska. Critical habitat provides key insights into Stellar sea lion biology and is described below.

Steller sea lions are most likely to be encountered in the Action Area both in the vicinity of the port dredging and during barge transit between Juneau and the port.

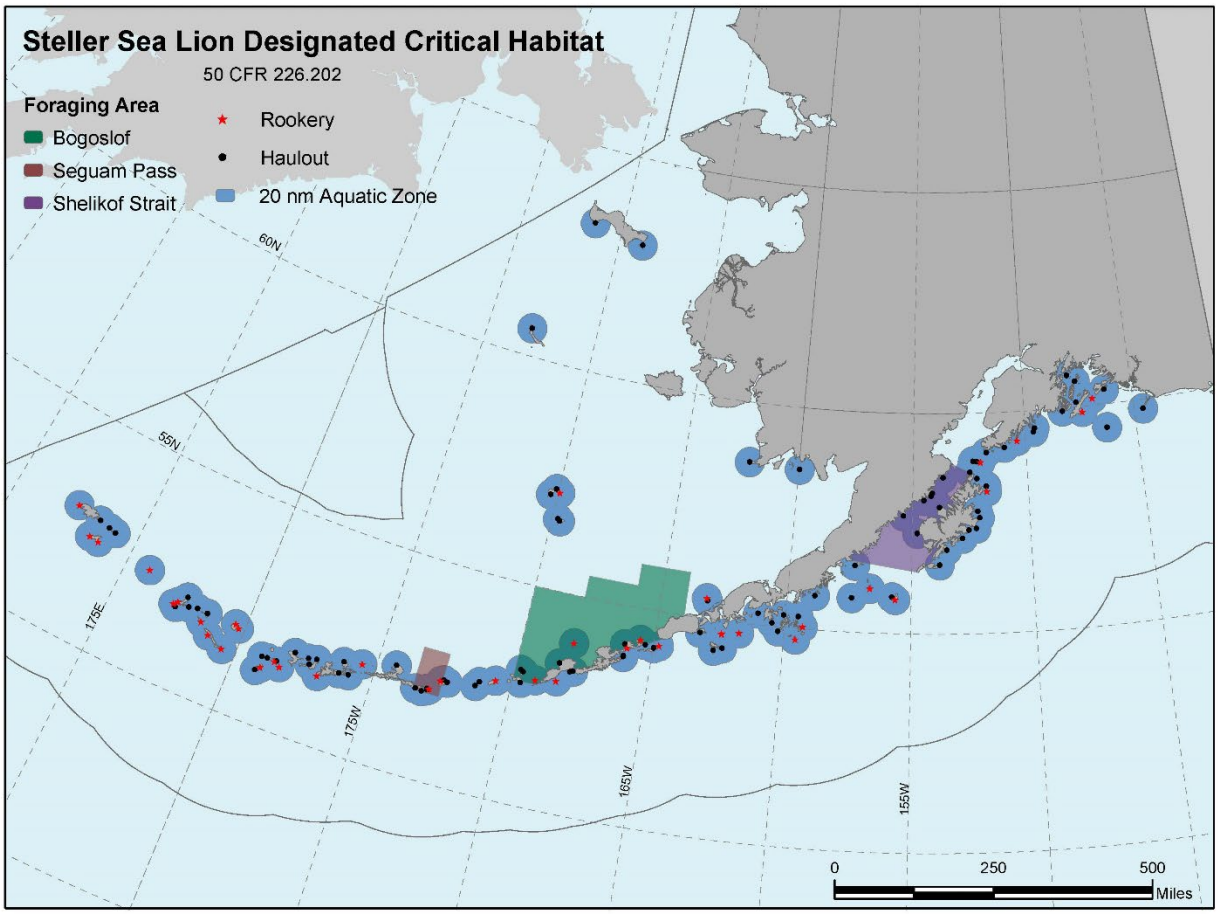
3.16.4 Critical Habitat

Steller sea lion critical habitat was established in 1993 for a 20 nm aquatic zone around known rookeries and haulouts, in addition to foraging areas at Bogoslof, Seguam Pass, and Shelikof Strait (58 FR 45269). Essential habitat features are not as clearly defined in the 1993 listing as in more recent critical habitat designations, but key considerations were haul outs, rookeries, food resources, and foraging habitats.

Critical habitat maps depicting protected habitat are most accessible from this link: https://media.fisheries.noaa.gov/dam-migration/steller-sea-lion-critical-habitat-alaska.pdf.

Critical habitat is present along the barge transportation route between Juneau and the project. No critical habitat exists in the vicinity of the dredging for the project.

Figure 24 Steller Sea Lion Designated Critical Habitat



From: https://media.fisheries.noaa.gov/dam-migration/steller-sea-lion-critical-habitat-alaska.pdf

4.0 POTENTIAL EFFECTS OF THE ACTION AND CONSERVATION MEASURES

This section describes the potential environmental effects that are likely to occur from the Proposed Action. Impacts described in this section are evaluated and lead to a potential effects determination.

Indirect effects are caused by actions connected to the Proposed Action. Indirect effects of the Proposed Action are the continued operations of the DeLong Mountain Transportation System port into the future. Without the Proposed Action, the port could be closed, the transportation system would become ineffective, and the Red Dog Mine would be without an effective supply chain.

This BA also considers the effects of cumulative impacts. A cumulative impact, as defined by the Council on Environmental Quality (40 CFR 1508.7), is the:

> *"…impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."*

No cumulative past, present, or potential future actions have been announced for the region of influence for this project.

4.1 In Water Noise

The Proposed Action will include the operation of heavy equipment, including a clamshell dredge and a tug towing a barge. In water noise from these activities could impact protected species. In water noise analysis for NMFS species is presented here, to act a reference for subsequent sections. USFWS has allowed NMFS to take the lead on in water noise analysis, and often applies NMFS' criteria to USFWS species.

Protected species rely on hearing to perform four basic functions (Richardson et al. 1995):

- Obtain information from their environment
- Communicate
- Detect prey
- Detect predators

Anthropogenic noise may impact protected species in these zones (Richardson et al. 1995):

- **Zone of hearing loss, discomfort, injury:** Individual may experience injury or discomfort. This may include Temporary Threshold Shift (TTS) or Permanent Threshold Shift (PTS); which are temporary or permanent loss of hearing.
- **Zone of masking:** Individual experiences interference with natural noise.
- **Zone of responsiveness:** Individual reacts to the noise.
- **Zone of audibility:** Individual may hear the noise.

Potential effects of noise on protected species include:

- Tolerance
- Masking
- Disturbance Reactions
- Stranding/Mortality
- Change in Hearing

This document is not intended to be a primer deep literature of noise impacts to marine mammals. Richardson et al. (1995) provides baseline information on how noise impacts marine mammals, and NMFS (2018a) includes acoustic technical guidance that discusses noise. Both are incorporated here by reference.

NMFS (2018a) guidance states the acoustic thresholds for disturbance (Level B) and injury (Level A) impacts to marine mammals (Table 2) (NMFS 2018a).

Table 2 NMFS In Water Acoustic Thresholds

Species	Level B – Disturbance		Level A – Injury	
	Impulsive Noise	Continuous Noise	Temporary Threshold Shift (TTS)	Permanent Threshold Shift (PTS)
Low-Frequency Cetaceans (Baleen Whales)	160 dBrms	120 dBrms	179 dB	199 dB
Mid-Frequency Cetaceans			177 dB	198 dB
High-Frequency Cetaceans			152 dB	173 dB
Phocid Pinnipeds (True Seals)			181 dB	201 dB
Otariid Pinnipeds			198 dB	219 dB

Key:
dB – Decibel
rms – Root Mean Squared

NMFS (2018a) also allows applicants to calculate the acoustic thresholds above which a marine mammal may experience Permanent Threshold Shift (PTS). This procedure is followed below.

The first factor in calculation of acoustic thresholds is the sound source levels (Table 3). There are two good sources for received sound levels on clamshell dredgers in Alaska.

- Dickerson et al. (2001) provides sound levels at 150 m for clamshell dredge operations in Cook Inlet, Alaska. These are of limited usefulness because sound source level calculations are typically completed with noise measurements at 1 m.
- Miles et al. (1987) provides clamshell dredge sound source levels for the Alaskan Beaufort Sea.

We use Miles in our analysis because their levels were measured at 1 m. We also used the widely used sound source levels from Richardson et al. (1995) for tugs towing a barge (Table 3).

Table 3 Received Sound Levels from Sound Sources

Sound Sources	Received Sound Level	Frequency
Clamshell Dredger	124 dB @ 150 m*	20 – 1,000 Hz
	161 dB @ 1 m**	50 – 3,160 Hz
Tug Towing Barge	170 dB @ 1 m***	10 – 5,000 Hz

*Dickerson et al. 2001
**Miles et al. (1987),
***Richardson et al. (1995)

To model the threshold isopleths, the following inputs were used for the NMFS model (NMFS 2018, https://jmlondon.shinyapps.io/AcousticThresholds/):

- Sound Source: Other
- Non-impulsive, stationary, intermittent sound source
- Single strike Sound Exposure Level for cumulative sound exposure level
- Broadband frequency spectrum
- 161 dB source level
- 24-hour work period
- 60 pulses in 1 hour
- No propagation/transmission loss coefficients are available for this project, and so we followed NMFS's advice in adopting a 'conservative' 20 Log R (NMFS 2018a).
- Weighting functions of 0, except for a weighting function of -5 for phocid

For tug towing a barge operation, these same settings were adjusted to:

- Non-impulsive, mobile, continuous sound source
- 170 dB source level
- 10 meters/second velocity (20 knots)

With these inputs, the NMFS online calculator provided the results in Table 4.

Table 4 NMFS Distance to PTS for Proposed Action

Activity	Isopleth to PTS Threshold – Injury
	All Species
Clamshell Dredge	< 10 m
Tug Towing Barge	< 1 m

Given the results in Table 4 and proposed conservation measures, no Level A impacts are anticipated to protected species.

The NMFS guidance cannot be used for calculating Level B disturbance radii.

One methodology NMFS (2012) recommends is the practical spreading loss model, listed below.

$$R_2 = R_1 * 10^{\wedge} ((dB_{at\ R1} – dB_{acoustic\ threshold})/15)$$

This model was used to model Level B isopleths for clamshell dredging and tugs towing a barge in Table 5.

Table 5 NMFS Distance to Level B for Proposed Action

Activity	Received Sound Level	Level B Acoustic Threshold	Isopleth to Level B - Disturbance
			All Species
Clamshell Dredge	161 dB @ 1 m	160 dB_{rms}	1 m
Tug Towing Barge	170 dB @ 1 m	120 dB_{rms}	2,154 m

Given the results from Table 5, no Level B impacts are anticipated to protected species from dredging.

Level B impacts may take place within 2,154 m of the tug towing a barge over the roughly 5,300 km route between Juneau and the port.

The 120 dB Level B threshold is widely considered to be very conservative. To put the 120 dB Level B threshold in perspective, Richardson et al. (1995) reports that sea ice pressure ridges generate noise from 124 – 137 dB @ 1 m.

4.2 Spectacled Eider, *Somateria fischeri*

4.2.1 Activities

4.2.1.1 Disturbance and Activity

Project related lighting may distract migrating eiders. Eiders could collide with the vessels or other heavy equipment during poor weather and poor visibility conditions. The vessels could present a collision hazard especially in fall when migrating spectacled eiders transit nearshore areas below altitudes of 10 m (33 ft) and relatively high rates of speed at about 72 km per hour (45 miles per hour) (USFWS, 2010b). Collision rates between spectacled eiders and ships are unknown but have occurred (Lovvorn et al. 2003). To minimize potential collisions, equipment would reduce lighting during inclement weather, while maintaining all lighting required for safe operations, to minimize attracting birds and potential collisions.

Spectacled eiders move offshore to molt after breeding in the spring/summer. The project area is not an area of concentration of molting eiders, but individuals could molt in the area. While molting, the birds are flightless, and noise or activity could cause them to use more energy in fleeing disturbances. These impacts would be short-term and limited in duration.

In air noise from heavy equipment operations will occur. This may cause eiders to avoid the immediate area, but impacts would be short-term and temporary.

In water noise will occur. No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tugs towing a barge are anticipated to be non-significant given the limited amount of activity in the Proposed Action.

4.2.1.2 Dredging

Dredging would result in locally higher levels of turbidity at the dredge site and the deposition area. The Chukchi Sea at this location is naturally turbid, and turbidity impacts from the project are not anticipated to significantly change the turbidity experienced by eiders. Impacts from increases in turbidity are anticipated to be minor and temporary.

Dredging will result in changes to bathymetry and topography, both at the dredged site and the deposition area. These changes are not anticipated to impact eiders, as they are relatively minor, and there are millions of acres of continuous natural habitat available surrounding the project.

4.2.1.3 Oil Spills

The dredge and disposal action does not require large amounts of oil or petroleum products. Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment. Cleanup will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response. The spill impacts would likely be localized and limited in duration.

4.2.2 Critical Habitat

No critical habitat is designated in the vicinity of the project.

4.2.3 Indirect

The Proposed Action would allow the continued use of the port for operations. Vessel loading, offloading, and lightering would continue. Negative impacts from this activity for eiders would focus on potential vessel collisions. These impacts are currently avoided and minimized by the slow speed vessels operate at the facility. Vessels also reduce lighting, as safety allows, to avoid attracting eiders, during poor weather.

The continued use of the port would include the transfer of millions of gallons of fuel every year, and the export of mined concentrate. Both present the risk of spills introducing contaminated material into the environment. The applicant and operator have a spill response plan in place for management of spilled materials. They have also implemented a baseline sediment sampling program which is ongoing and has demonstrated that existing metals concentrations in the benthic environment are very low and not increasing. No large spills of concentrates or fuel has taken place in the past.

4.2.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect spectacled eiders.

4.2.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* spectacled eiders and their critical habitat.

4.3 Steller's Eider, *Polysticta stelleri*

4.3.1 Activities

Activity impacts would be similar to those described for spectacled eiders (Section 4.2).

4.3.2 Critical Habitat

No critical habitat is designated in the vicinity of the project.

4.3.3 Indirect

Indirect impacts would be similar to those described for spectacled eiders (Section 4.2)

4.3.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect Steller's eider.

4.3.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affec*t Steller's eider.

4.4 Polar Bear, *Ursus maritimus*

4.4.1 Activities

Polar bears in the area are not local residents but are traveling through the region.

Project related impacts to polar bears are unlikely to cause direct takes of polar bears.

4.4.1.1 Disturbance and Activity

Polar bears may be attracted to continued activity at the port. Polar bears are curious, and noise, lighting, or activity can attract their attention. Polar bears could also avoid the continued activity at the port. Avoidance might be due to noise, lighting, or other stimulus. If a polar bear,

or other protected species, is observed, the Proposed Action will halt to allow the animal to move through the area.

Polar bears can be attracted to human generated waste. The project applicant maintains a strict waste management program that prevents polar bears, or other wildlife, from interacting with waste.

4.4.1.2 Dredging

Dredging may cause temporary changes in local turbidity. These are not anticipated to significantly impact polar bears.

Dredging may cause changes in local bathymetry and topography, at both the dredging area and deposition area. These are not anticipated to significantly impact polar bears.

4.4.1.3 Human-Bear Interactions

Polar bears could interact with people during the Proposed Action. While no polar bear has been seen at the port, if a polar bear is sighted it would be reported to the local environmental specialists, standard procedures at the site for bear encounters would be implemented, which includes monitoring the bear and warning people away from the bear.

4.4.1.4 Physical Obstruction

Polar bears are not anticipated to encounter physical obstructions during the Proposed Action. The Proposed Action will not construct a permanent feature which blocks access to an area. Heavy equipment will temporarily occupy space, but polar bears could walk or swim around the equipment.

4.4.1.5 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.4.1.6 In Water Noise

The USFWS analysis for polar bear in the Beaufort Sea did not anticipate polar bears would be disturbed by industrial in water noise (USFWS 2016). Their analysis: "*Bears in water could also be affected by acoustic propagation of underwater sounds (e.g., seismic airguns), although sound received in water would likely be attenuated due to the pressure release effect of sounds near the water's... Furthermore, because polar bears do not generally dive or spend prolonged periods with their heads submerged, it is likely polar bears in the water would experience very little acoustic disturbance*" (USFWS 2016).

4.4.1.7 Denning

The Proposed Action will not occur when there is sea ice, so it will be outside of the time window of polar bear denning.

4.4.2 Critical Habitat

The Proposed Action is adjacent to polar bear barrier island critical habitat. The Federal Register Notice (75 FR 76085) states barrier island critical habitat is preserved for: “denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat.”

- *Denning:* The Proposed Action does not include activity when sea ice is present, which eliminates potential impacts to polar bear denning.
- *Refuge from human disturbance:* If a polar bear is observed, the Proposed Action will halt operations to allow the bear to move away from the area. The best available science indicates that the closest record of a polar bear was 16 km (10 mi) away from the Proposed Action (USGS 2018, Rode 2015). Discussions with local environmental staff confirm no history of polar bear sightings in the area, which confirms their presence at the site of the Proposed Action is rare. No significant impacts to polar bears are anticipated from impacts to ‘refuge from human disturbance.’
- *Movements along the coast to access maternal den and optimal feeding habitat:* As discussed above, polar bear do not have a history of using the area. If a polar bear is observed, the Proposed Action will halt operations to allow the bear to move through the area. No significant impacts are anticipated to polar bear movements along the coast.

4.4.3 Indirect

The Proposed Action would allow the continued use of the port for operations. Vessel loading, offloading, and lightering would continue. These activities occur during the ice-free season, and so no impacts are anticipated to polar bear dens.

Negative impacts from this activity may include the potential for vessel collision. This risk is mitigated by the slow speed vessels operate at the facility.

Polar bears could be attracted to or avoid the area due to continued activity at the port, similar to those described above. The same plans and procedures described in that section are used during the operations of the port and are anticipated to not significantly impact polar bears.

The continued use of the port would include the transfer of millions of gallons of fuel every year, and the export of mined concentrate. Both present the risk of spills introducing contaminated material into the environment. The applicant and operator have a spill response plan in place for management of spilled materials. They have also implemented a baseline sediment sampling program which is ongoing and has demonstrated that existing metals concentrations in the benthic environment are very low and not increasing. No large spills of concentrates or fuel has taken place in the past.

4.4.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect polar bear.

4.4.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* polar bear and their critical habitat.

4.5 Northern Sea Otter, *Enhydra lutris*

4.5.1 Activities

4.5.1.1 Disturbance and Activity

Impacts are limited to the barge transitioning from Juneau to Northwest Alaska. Noise from the barge movement and the physical presence of the barge is anticipated to occur. In water noise from barge movement may impact sea otters. Sea otter hearing has not been fully evaluated, and so the USFWS often uses otariid pinnipeds as a substitute (Ghoul and Reichmuth 2014). USFWS adapts NMFS Level A and Level B harassment thresholds for otariid pinnipeds as suitable for sea otters.

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by sea otter habitat. No significant impacts are anticipated.

4.5.1.2 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.5.2 Critical Habitat

Proposed conservation measures include not entering sea otter critical habitat. No impacts are anticipated to sea otter critical habitat.

4.5.3 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.5.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.5.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.6 Short-Tailed Albatross, *Phoebastria albatrus*

4.6.1 Activities

4.6.1.1 Barge transit

Short-tailed albatross may be present during the barge transit between Juneau and the port. Project related lighting may attract or distract albatross. The vessels could present a collision hazard especially in poor weather. To minimize potential collisions, equipment would reduce lighting during inclement weather, while maintaining all lighting required for safe operations, to minimize attracting birds and potential collisions.

In air noise from heavy equipment operations will occur. This may cause albatross to avoid the immediate area, but impacts would be short-term and temporary.

4.6.1.2 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.6.2 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.6.3 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.6.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.7 Blue Whale, *Balaenoptera musculus*

4.7.1 Activities

4.7.1.1 Disturbance and Activity

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual blue whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.7.1.2 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.7.2 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.7.3 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.7.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.8 Bowhead Whale, *Balaena mysticetus*

4.8.1 Activities

4.8.1.1 In Water Noise

The Proposed Action will include the operation of heavy equipment, including a clamshell dredge and barge.

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.8.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact bowhead whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on bowhead whales.

4.8.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.8.2 Indirect Effects

The Proposed Action would allow the continued use of the port for operations. Vessel activity could have negative impacts through collisions with protected species. These are avoided and minimized by the slow speed vessels operate in the vicinity.

Vessel activity can also have noise impacts to species, but the relatively few individuals and vessels that occur in the area are expected to minimize these impacts.

The continued use of the port would include the transfer of millions of gallons of fuel every year, and the export of mined concentrate. Both present the risk of spills introducing contaminated material into the environment. The applicant and operator have a spill response plan in place for management of spilled materials. They have also implemented a baseline sediment sampling program which is ongoing and has demonstrated that existing metals concentrations in the benthic environment are very low and not increasing. No large spills of concentrates or fuel has taken place in the past.

4.8.3 Cumulative Effects

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect bowhead whales.

4.8.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* bowhead whales.

4.9 Fin Whale, *Balaenoptera physalus*

4.9.1 Activities

4.9.1.1 In Water Noise

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.9.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on whales.

4.9.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.9.2 Indirect Effects

Indirect effects would be similar to those described for bowhead whales. Indirect effects are not anticipated to adversely affect fin whales.

4.9.3 Cumulative Effects

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect fin whales.

4.9.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* fin whales.

4.10 Grey Whale, *Eschrichtius robustus*

4.10.1 Activities

4.10.1.1 Disturbance and Activity

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.10.1.2 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.10.2 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.10.3 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.10.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.11 Humpback Whale, *Megaptera novaeangliae*

4.11.1 Activities

4.11.1.1 In Water Noise

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.11.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on whales.

4.11.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.11.2 Critical Habitat

Project vessels will pass through designated humpback whale critical habitat. In designating critical habitat, NMFS repeatable states no impacts are anticipated to occur from vessel traffic (86 FR 21082). For example, two direct quotations include:

- *We* (NMFS) *do not anticipate that the critical habitat designation will generate additional conservation efforts for humpback whales associated with vessel traffic management.*
- *The following categories of activities with a Federal nexus were identified as having the potential to affect the essential prey feature and as being expected to occur within one or more of the specific critical habitat areas under consideration: …(5) vessel traffic (specifically, activities related to establishment of the shipping lanes by the United States Coast Guard (USCG), and other USCG activities, including maintenance, repair, and replacement of aids to navigation)*

The critical habitat was developed based on the prey humpback whales are most likely to utilize. No significant impacts from the Proposed Action are anticipated to the prey. As a result, no impacts are anticipated to humpback whale critical habitat.

4.11.3 Indirect Effects

Indirect effects would be similar to those described for bowhead whales. Indirect effects are not anticipated to adversely affect humpback whales.

4.11.4 Cumulative Effects

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect humpback whales.

4.11.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* humpback whales and their critical habitat.

4.12 North Pacific Right Whale, *Eubalaena japonica*

4.12.1 Activities

4.12.1.1 In Water Noise

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.12.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on whales.

4.12.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.12.2 Critical Habitat

Critical habitat may be crossed by tugs towing a barge during transit between Juneau and the port. Implementation of the proposed Conservation Measures is anticipated to avoid the potential for a direct physical impact to right whales.

Right whale critical habitat has the potential to be exposed to in water noise from the vessel movements. No Level A impacts are anticipated from in water noise (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass >460 m (500 yds) by individual whales. The temporary and transitory nature of the vessel transit is not anticipated to have significant impacts to critical habitat.

4.12.3 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.12.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.12.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.13 Sei Whale, *Balaenoptera borealis*

4.13.1 Activities

4.13.1.1 In water noise

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.13.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on whales.

4.13.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.13.2 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.13.3 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.13.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.14 Sperm Whale, *Physeter macrocephalus*

4.14.1 Activities

4.14.1.1 In water noise

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual whales. The number of whales that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.14.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact whales. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on whales.

4.14.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.14.2 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.14.3 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.14.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

4.15 Arctic Ringed Seal, *Phoca hispida*

4.15.1 Potential Effects and Mitigation

4.15.2 Activities

4.15.2.1 In Water Noise

The Proposed Action will include the operation of heavy equipment, including a clamshell dredge and barge.

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual seals. The number of seals that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.15.2.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact seals. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on seals.

4.15.2.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.15.3 Critical Habitat

The Proposed Action is in potential critical habitat, which was designated as all waters between coastline and 370 km (200 nm) offshore. The current essential features are defined as seasonal sea ice habitat. By restricting activities to the ice-free season, no significant adverse impacts are anticipated to sea ice, which is the critical habitat.

4.15.4 Indirect Effects

The Proposed Action would allow the continued use of the port for operations. The port operates only in ice-free conditions, limiting the interaction to ringed seals, which prefer sea ice habitat.

Vessel activity could have negative impacts through collisions with protected species. These are avoided and minimized by the slow speed vessels operate in the vicinity.

Vessel activity can also have noise impacts to species. Level A impacts from noise are not anticipated from vessel traffic, given the small radii calculated for vessel traffic. Level B impacts may occur, assuming the conservative 120 dB threshold. Richardson et al. (1995) reports that sea ice pressure ridges generate noise from 124 – 137 dB @ 1 m. Given this level of ambient noise, addition vessel activity is not anticipated to rise to the level of significant impacts.

The continued use of the port would include the transfer of millions of gallons of fuel every year, and the export of mined concentrate. Both present the risk of spills introducing contaminated material into the environment. The applicant and operator have a spill response plan in place for management of spilled materials. They have also implemented a baseline sediment sampling program which is ongoing and has demonstrated that existing metals concentrations in the benthic environment are very low and not increasing. No large spills of concentrates or fuel has taken place in the past.

4.15.5 Cumulative Effects

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect ringed seals.

4.15.6 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* ringed seals and their critical habitat.

4.16 Bearded Seal, *Erignathus barbatus*

4.16.1 Activities

4.16.1.1 In Water Noise

The Proposed Action will include the operation of heavy equipment, including a clamshell dredge and barge.

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual seals. The number of seals that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.16.1.2 Dredging

Other impacts from dredging and deposition of the dredged material are not likely to significantly impact seals. Turbidity and changes in the bathymetry/topography of the shoreline are not anticipated to have impacts on seals.

4.16.1.3 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current best management practices, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with the spill response equipment kept on hand. Cleanup at the port will be facilitated by ice-free conditions, the relatively small area of operations, and the large amount of available equipment at the port to assist in oil spill response.

4.16.2 Indirect Effects

The Proposed Action would allow the continued use of the port for operations. Bearded seals could be present at any time during port operations.

Vessel activity could have negative impacts through collisions with protected species. These are avoided and minimized by the slow speed vessels operate in the vicinity.

Vessel activity can also have noise impacts to bearded seals. Level A impacts from noise are not anticipated from vessel traffic, given the small radii calculated for vessel traffic. Level B impacts may occur, assuming the conservative 120 dB threshold. Richardson et al. (1995) reports that sea ice pressure ridges generate noise from 124 – 137 dB @ 1 m. During the summer ambient noise would be lower, but vessel activity is concentrated in one small location surrounded by miles of unoccupied habitat. Given this level of ambient noise, addition vessel activity is not anticipated to rise to the level of significant impacts.

The continued use of the port would include the transfer of millions of gallons of fuel every year, and the export of mined concentrate. Both present the risk of spills introducing contaminated

material into the environment. The applicant and operator have a spill response plan in place for management of spilled materials. They have also implemented a baseline sediment sampling program which is ongoing and has demonstrated that existing metals concentrations in the benthic environment are very low and not increasing. No large spills of concentrates or fuel has taken place in the past.

4.16.3 Cumulative Effects

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect bearded seals.

4.16.4 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* bearded seals.

4.17 Steller Sea Lion, *Eumetopias jubatus*

4.17.1 Activities

4.17.1.1 Disturbance and Activity

No Level A impacts are anticipated from in water noise (Section 4.1). No Level B impacts are anticipated from dredging (Section 4.1). Level B impacts from tug towing a barge may take place, but are anticipated to be brief and temporary, as tugs pass by individual seals. The number of seals that may be temporarily exposed to the ensonified Level B impact zone is not significant in comparison to the population. No significant impacts are anticipated.

4.17.1.2 Oil Spills

Large spills are unlikely to occur. The Proposed Action does not include the use of large amounts of oil.

Small spills may occur from fuel tanks, lubricant, or other sources. Current management of oil, such as proper storage, inspection, use, and disposal, will minimize the potential for oil spills. These spills are anticipated to be cleaned up with spill response equipment kept on the barge. Cleanup will be facilitated by ice-free conditions. The spill impacts would likely be localized and limited in duration.

4.17.2 Critical Habitat

The Proposed Action has committed to:

- Vessels will not approach within 5.5 km (3 nm) of rookery sites listed in (50 CFR § 224.103(d)).
- Vessels will avoid approaching within 914 m (3,000 ft) of any Steller sea lion haulout or rookery.

As a result, no significant impacts to critical habitat are anticipated for the project.

4.17.3 Indirect

The Proposed Action would allow the continued use of the port, which is north of the species range. No significant indirect impacts are anticipated from the Proposed Action.

4.17.4 Cumulative

No cumulative past, present, or potential future actions have been announced for the region of influence of this project. Cumulative effects are anticipated to not likely adversely affect the species.

4.17.5 Effects Determination

With the implementation of conservation measures, the overall effects of the Proposed Action can be summarized as *may affect, not likely to adversely affect* the species.

5.0 EFFECTS DETERMINATIONS

Based on the evaluation presented above, Table 6 presents the effects determinations for ESA-listed species and critical habitat from implementation of the proposed action within the Action Area. We request concurrence on "may affect, but not likely to adversely affect" determinations.

Table 6 Effects Determinations for ESA-Listed Species and Critical Habitat

Common Name	Scientific Name	ESA Status	Effects Determination	
			Species	Critical Habitat in Action Area?
Spectacled Eider	*Somateria fischeri*	Threatened	NLAA	ND
Steller's Eider	*Polysticta stelleri*	Threatened	NLAA	ND
Polar Bear	*Ursus maritimus*	Threatened	NLAA	NLAA
Northern Sea Otter	*Enhydra lutris*	Threatened	NLAA	NLAA
Short-Tailed Albatross	*Phoebastria albatrus*	Endangered	NLAA	ND
Blue Whale	*Balaenoptera musculus*	Endangered	NLAA	ND
Bowhead Whale	*Balaena mysticetus*	Endangered	NLAA	ND
Fin Whale	*Balaenoptera physalus*	Endangered	NLAA	ND
Grey Whale	*Eschrichtius robustus*	Endangered	NLAA	ND
Humpback Whale	*Megaptera novaeangliae*	Threatened	NLAA	NLAA
		Endangered	NLAA	NLAA
North Pacific Right Whale	*Eubalaena japonica*	Endangered	NLAA	NLAA
Sei Whale	*Balaenoptera borealis*	Endangered	NLAA	ND
Sperm Whale	*Physeter macrocephalus*	Endangered	NLAA	ND
Arctic Ringed Seal	*Phoca hispida*	Threatened	NLAA	NLAA
Bearded Seal	*Erignathus barbatus*	Threatened	NLAA	ND
Steller Sea Lion	*Eumetopias jubatus*	Endangered	NLAA	NLAA

Key:
DPS – Distinct Population Segment
ESA – Endangered Species Act
NLAA – May affect, not likely to adversely affect
ND – No critical habitat designated

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