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

Willow Master Development Plan

Environmental Impact Statement

RECORD OF DECISION

October 2020

Prepared by:
U.S. Department of the Interior
Bureau of Land Management

In Cooperation with:
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Native Village of Nuiqsut
Iñupiat Community of the Arctic Slope
City of Nuiqsut
North Slope Borough
State of Alaska

Estimated Total Costs Associated with Developing and Producing this EIS: $6,971,120

Record of Decision

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Record of Decision and Permit Evaluation for the Willow Master Development Plan

LEAD FEDERAL AGENCY	Bureau of Land Management
PROPONENT	ConocoPhillips Alaska, Inc.
APPLICATION REFERENCE NUMBER	BLM Case file FF097428
RESPONSIBLE OFFICIALS	David L. Bernhardt Secretary of the Interior U.S. Department of the Interior 1849 C St NW Washington, DC 20240 Chad Padgett State Director Bureau of Land Management, Alaska 222 W 7th Avenue #13 Anchorage, AK 99513
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ACRONYMS AND ABBREVIATIONS

ACP	Arctic coastal plain
ANILCA	Alaska National Interest Lands Conservation Act
APE	area of potential effects
BLM	Bureau of Land Management
BT1	Bear Tooth drill site 1
BT2	Bear Tooth drill site 2
BT3	Bear Tooth drill site 3
BT4	Bear Tooth drill site 4
BT5	Bear Tooth drill site 5
CAA	Clean Air Act
CFWR	constructed freshwater reservoir
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
GMT	Greater Mooses Tooth
GMT-1	Greater Mooses Tooth 1
GMT-2	Greater Mooses Tooth 2
MDP	Master Development Plan
MLA	Mineral Leasing Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPR-A	National Petroleum Reserve in Alaska
NPRPA	Naval Petroleum Reserves Production Act
Project	Willow Master Development Plan Project
Proponent	ConocoPhillips Alaska, Inc.
ROD	Record of Decision
ROP	Required Operating Procedure
ROW	right-of-way
SDEIS	Supplement to the Draft Environmental Impact Statement
USFWS	U. S. Fish and Wildlife Service
WOC	Willow Operations Center
WPF	Willow Processing Facility
WQC	Water Quality Certification

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1.0 INTRODUCTION

This document constitutes the U.S. Department of the Interior, Bureau of Land Management's (BLM's) Record of Decision (ROD or Decision) under the National Environmental Policy Act (NEPA) for approval of the Willow Master Development Plan (MDP) Project (Project), allowing for construction and operation of infrastructure proposed by ConocoPhillips Alaska, Inc. (the Proponent), necessary to produce and transport to market federal oil and gas resources under leaseholds in the northeast area of the National Petroleum Reserve in Alaska (NPR-A).

This Decision is prepared in accordance with BLM's authority under the Naval Petroleum Reserves Production Act (NPRPA), as amended (42 USC 6501-08), Section 302 of the Federal Land Policy and Management Act (FLPMA) (43 USC 1732), Section 28 of the Mineral Leasing Act (MLA) (30 USC 185), and Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) (16 USC 3120).

This ROD memorializes BLM's decision to select Alternative B (Proponent's Project) and Module Delivery Option 3 (Colville River Crossing), with special conditions, for the Project, as detailed in the August 2020 Final Willow MDP Environmental Impact Statement (FEIS) and discussed below. The scope of this Decision is limited to the components of the Project that occur on BLM-managed public lands in the NPR-A. Access to other lands is subject to landowner approval, and other federal, state, and local agencies will process applications for authorizations under their respective jurisdictions and authorities. Subsequent to this Decision approving the Willow MDP, the Proponent may submit applications for BLM authorizations, including permits and rights-of-way (ROWs), for the facilities and activities described in Section 3.0 (Project Description) below.

1.1 Background

BLM received a request from the Proponent on May 10, 2018, to prepare the Willow MDP Environmental Impact Statement (EIS), and BLM determined it adequate to initiate NEPA review. The BLM's Notice of Intent to prepare the EIS was published in the Federal Register on August 7, 2018. The EIS was developed to facilitate the permitting process for the Project's proposed development and operations.

The EIS analyzed the Proponent's proposal to develop the following:

- Up to five drill sites
- A central processing facility
- An operations center pad
- Up to 37.0 miles of gravel roads and seven bridges
- Up to 575.4 total miles of ice roads during construction
- An airstrip
- Up to 315.9 miles of pipelines (94.4 miles of new pipeline rack)
- A gravel mine site on federal land in the NPR-A
- Sealift barge transport of construction materials and prefabricated modules to the North Slope
- A constructed freshwater reservoir sized to provide 55 million gallons of water for winter withdrawal
- Up to three boat ramps for subsistence users

Chapter 2.0 (Alternatives) of the FEIS provides additional description of the Proponent's proposed development Project and alternatives thereto analyzed in the EIS. The Project is anticipated to have a peak production in excess of 160,000 barrels of oil per day (with a processing capacity of 200,000 barrels of oil per day) over its 30-year life, producing approximately 586 million barrels of oil.

The EIS was prepared by the BLM as the lead agency, with the assistance of the following cooperating agencies: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental

Protection Agency, State of Alaska, North Slope Borough, Native Village of Nuiqsut, City of Nuiqsut, and the Iñupiat Community of the Arctic Slope. The findings in the EIS are the result of an open, collaborative, and robust process among scientists, resource specialists, and regulatory staff of BLM, the cooperating agencies, and the participating public. This process resulted in an FEIS that—consistent with NEPA—provides an adequately detailed analysis of the environmental impacts of the Proponent's proposal and a reasonable range of alternatives, including the No Action Alternative, to inform and support the reviews and decisions of BLM and cooperating agencies for the Project. The Notice of Availability for the FEIS was published in the *Federal Register* on August 14, 2020.

1.2 Authorities

As the federal manager of the NPR-A, BLM is responsible for land-use authorizations and associated compliance with the requirements of NEPA (42 USC 4321 et seq.). The authority for management of the land and resource development options presented in the FEIS is pursuant to the NPRPA, FLPMA, MLA, ANILCA, and the Materials Act of 1947. Appendix C of the FEIS (Regulatory Authorities and Framework) includes additional BLM authorities, policies, regulations, and guidance discussion.

2.0 DECISION

This ROD approves the development of Project Alternative B with Module Delivery Option 3, as described in the FEIS and in this Decision below, subject to the terms and conditions described in Appendix A of this ROD (Mitigation Measures). Actions covered by this Decision are the approval of the Willow MDP and the associated issuance of subsequent authorizations, including permits and ROWs, for the construction and operation of the Project, based on the analysis contained in the FEIS.

This ROD does not constitute the final approval for all actions, such as approval for subsequent individual applications for authorizations, including permits to drill and ROWs associated with the Project. See Appendix C of the FEIS for additional information regarding applicable BLM authorizations and requirements. Also, as requested by the Proponent in a letter to BLM dated August 20, 2020, this ROD defers from its approval, at this time, Bear Tooth drill sites 4 and 5 (BT4 and BT5) and their respective road and pipeline segments connecting to Bear Tooth drill sites 2 and 3 (BT2 and BT3), respectively. This deferral is intended to allow the Proponent to undertake additional consultation with stakeholders in the community of Nuiqsut to further address concerns some stakeholders have raised regarding potential impacts to caribou migration and subsistence hunting associated with these portions of the Project, prior to BLM addressing approval of these drill sites in a record of decision. Pursuant to Project Alternative B, unlike the other aspects of the Project for which construction would be initiated in 2021, construction of drill sites BT4 and BT5 would occur during a later phase of development beginning in 2026. Accordingly, BLM need not address approval of these two drill sites at this time.

The Proponent is hereby required to comply with all terms and conditions described or listed in Appendix A of this ROD, including applicable lease stipulations for those oil and gas leases comprising the Project area, best management practices (BMPs) or Required Operating Procedures (ROPs) required by the NPR-A Integrated Activity Plan in effect at the time of subsequent permit issuance, and design features incorporated by the Proponent; new mitigating measures selected from the FEIS Appendix I (Avoidance, Minimization, and Mitigation Technical Appendix) (included in Appendix A of the ROD, Section 2.0, *Additional Mitigation Measures Adopted*); and other measures reflecting requirements under Beaufort Sea Incidental Take Regulations developed pursuant to the Marine Mammal Protection Act and requirements resulting from consultation under Section 7 of the Endangered Species Act (ESA) (Section 4.0, *Other Required Mitigation*, of Appendix A of this ROD). Additional mitigation measures analyzed in the FEIS but not adopted by this Decision are described in Section 3.0, *Additional Mitigation Measures Not Adopted*, of Appendix A of this ROD, which includes BLM's rationale for not adopting the measures.

This ROD completes the required FEIS process and NEPA requirements for the subsequent issuance of BLM approvals, grants, and other authorizations necessary for development of all aspects of the Willow

MDP on federal lands managed by the BLM except drill sites BT4 and BT5 and their respective road and pipeline segments. When the Proponent has completed its additional consultation with the community of Nuiqsut and seeks authorization for drill sites BT4 and BT5, this ROD may be amended to address approval of those drill sites.

3.0 PROJECT DESCRIPTION

3.1 Overall Project Description

The Project would extend an all-season gravel road from the Greater Mooses Tooth (GMT) 2 development southwest toward the Project area (Figure 1). Gravel roads would connect to all Project gravel infrastructure, including the Willow Processing Facility (WPF), Willow Operations Center (WOC), airstrip, and five drill sites (Bear Tooth drill site 1 [BT1], BT2, BT3, BT4, and BT5). Additional Project support facilities would include a constructed freshwater reservoir (CFWR), four valve pads, four pipeline pads, two water source access pads (at the CFWR and Lake L9911), eight road turnouts (with subsistence access ramps), seven bridges, horizontal directional drilling pipeline pads at the Colville River, and up to three boat ramps for subsistence use.

The gravel infield road would extend from BT3 north, crossing Judy (Iqalliqpik) Creek before reaching BT1. From BT1, the road would continue north, crossing Judy (Kayyaaq) Creek, to reach BT2 before crossing Fish (Uvlutuuq) Creek and ending outside the eastern boundary of the K-5 Teshekpuk Lake Caribou Habitat Area at BT4. An additional gravel road would extend south from BT3 to connect to BT5. Infield (multiphase) pipelines would connect individual drill sites to the WPF, and export/import pipelines would connect the WPF to existing infrastructure on the North Slope. Diesel fuel would be piped from Kuparuk CPF2 to the Alpine Central Processing Facility and then trucked to the Project area. Alternative B would also include a pipeline tie-in pad near Alpine CD4N and an expansion of the existing pad at Kuparuk CPF2.

The access road alignment would provide direct gravel-road access from the existing gravel road network in the GMT and Alpine developments to the Project facilities. The all-season gravel road connection to Alpine would allow for additional operational safety and risk reduction by providing redundancies and additional contingencies for each development; this road connection would also provide support for the reasonably foreseeable future actions described in FEIS Section 3.19 (Cumulative Effects).

Ice roads would be primarily used during Project construction to support gravel placement and pipeline construction, for lake access, to access the gravel mine site, and to transport sealift modules from Oliktok Dock. Separate ice roads would be used for pipeline construction, gravel placement, and general traffic to address safety considerations. A partially grounded ice bridge across the Colville River near Ocean Point would be used to transport sealift modules to the Willow area. The ice road would originate at the end of the existing Kuparuk road system at drill site 2P.

Electrical power for the Project would be generated by a 98-megawatt power plant at the WPF, equipped with natural gas–fired turbines. Power would be delivered to each drill site and the WOC via power cables suspended from pipelines. Gravel would be primarily obtained from a new gravel mine site in the Tiŋmiaqsiuġvik area, approximately 4 to 5 miles southeast of GMT-1. Small amounts of gravel would also be obtained from existing mine sites C, E, and F in Kuparuk to widen sections of existing Kuparuk roads that would be used for module transport.

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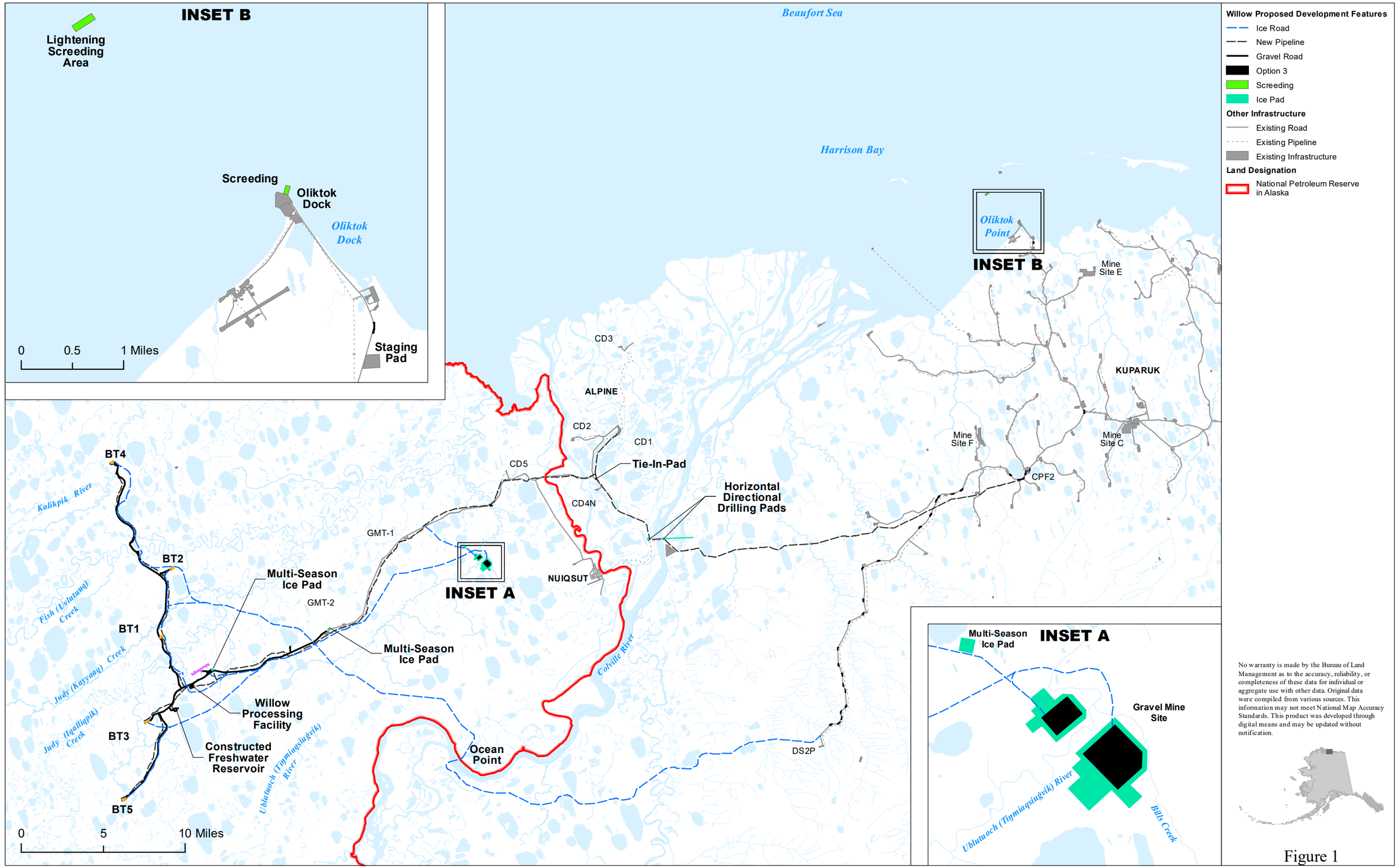

Figure 1

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3.2 Project Location

The Project is located on the North Slope of Alaska, with the majority of the proposed facilities on leased federal lands within the Bear Tooth Unit in the northeastern portion of the NPR-A. Supporting infrastructure, including road connections, pipeline tie-ins, and the gravel mine site would be located on federal and Native corporation–owned lands in the GMT Unit, on non-unitized lands within the NPR-A, and on lands or waters owned and managed by the State of Alaska. None of the gravel facilities would be located on Native allotments.

4.0 ALTERNATIVES

As presented in Chapter 2.0 and Appendix D.1 (Alternatives Development) of the FEIS, following Project scoping, BLM convened a series of alternatives development meetings with the EIS cooperating agencies. These meetings identified a range of options for the Project or its constituent components; the Project components that options were identified for include access, airstrips, module delivery, a mine site, gravel pads, a diesel fuel pipeline, and a processing facility. This process and the initial range of alternatives are detailed in FEIS Appendix D.1.

4.1 Alternatives Considered and Carried Forward for Detailed Analysis in the Final Environmental Impact Statement

BLM and the cooperating agencies developed four alternatives (three action alternatives, including the Proponent's proposed Alternative B, and the No Action Alternative) for evaluation in the EIS. The range of alternatives was developed to address the resource impact issues and conflicts identified during internal scoping with the BLM Interdisciplinary Team and external scoping with the public and cooperating agencies. Additionally, three options were presented for how sealift modules (required for all action alternatives) would be delivered to the Project; any one of the module delivery options could be paired with any action alternative:

Please see Chapter 2.0 and Appendix D.1 of the FEIS for a detailed description and comparison of the alternatives.

The four alternatives are as follows:

- Alternative A: No Action
- Alternative B: Proponent's Project
- Alternative C: Disconnected Infield Roads
- Alternative D: Disconnected Access

The three module delivery options are as follows:

- Option 1: Atigaru Point Module Transfer Island
- Option 2: Point Lonely Module Transfer Island
- Option 3: Colville River Crossing

4.2 Rationale for Adopting Alternative B and Module Delivery Option 3

Among the alternatives evaluated in the FEIS, Alternative B with Module Delivery Option 3 will result in fewer overall environmental impacts on BLM-managed land than the other action alternatives and module delivery options and therefore is considered by BLM to be the environmentally preferred alternative and is BLM's selected alternative in this ROD.

Although the elimination of a road in Alternatives C and D would aid caribou movements in the area, the increase in air traffic to the roadless development would increase the overall disturbance of caribou. In the case of Alternative C, the added North Airstrip near BT2 would be close to a high-density caribou calving area, with most air traffic landing from the west due to the dominant wind direction. This would likely

cause disturbance and/or displacement of calving caribou and have some impacts on caribou movements during other times of the year.

An additional airstrip would also include the impacts of additional fill (and the multitude of associated impacts of the fill) and additional air traffic (and the additional indirect effects of that traffic), which would be greater than the impacts of building an infield road to connect the drill sites.

The increase in air traffic for a roadless alternative is substantial. The addition of 1 more airstrip in Alternative C would add 7,473 more fixed-wing trips and 489 helicopter trips over the life of the Project (62% more fixed-wing traffic and 20% more helicopter traffic than having a road). Alternative D would not need an additional airstrip but would still have 6,937 more fixed-wing trips and 82 helicopter trips over the life of the Project (57% more fixed-wing traffic and 3% more helicopter traffic) than the selected alternative.

A diesel pipeline from Kuparuk CPF2 to the Willow Processing Facility (WPF) was considered in Alternatives C and D. Such a pipeline would reduce the amount of diesel trucked by road and therefore incrementally reduce the spill risk of diesel fuel along the road. It would also marginally reduce truck traffic over the life of the Project. Alternative B, as adopted by this ROD, includes a diesel pipeline only from Kuparuk CPF2 to the Alpine Central Processing Facility and from there, diesel will be trucked the remaining distance to the WPF. Overall, the benefits of extending the diesel pipeline in Alternatives C and D to the WPF do not outweigh the impacts from extending the pipeline. A diesel pipeline extension would not be in operation until the end of construction; however, during the construction period is when the Project would require the most diesel fuel. Under Alternatives C and D, when the construction of the pipeline would be completed and in use, diesel would be pumped from Alpine to Willow during a short period of several days each month, and the pipeline would be idle the remainder of the time. Idle diesel fuel would increase the potential for sedimentation and corrosion within the pipeline, which increases the risk of a diesel spill from the pipeline. Extension of the pipeline would also add an additional year of construction, which would require additional water withdrawals for the construction of ice roads. Additionally, construction of the extended pipeline would add traffic during a time—the Project construction phase—when traffic levels would be the highest, further increasing construction-related disturbance and associated impacts.

The selected alternative and module delivery option would have the fewest ice roads, least water use, fewest vehicle trips, fewest fixed-wing aircraft trips, fewest helicopter trips, fewest acres of screeding, and no gravel fill in the marine area. These Project components, how they minimize effects, and how they contribute to the rationale for selection are summarized in Table 1.

Table 1. Summary of Rationale for Selected Alternative and Option

Project Component	Rationale for Selection
Acres of freshwater ice infrastructure	• Least disturbance to wildlife and birds during winter • Smallest area of vegetation compaction • Least impact to subsistence resources
Water use	• Fewest effects to water quantity in water source lakes
Vehicle trips	• Least potential for vehicle strikes of wildlife • Fewest number of vehicles causing dust from gravel infrastructure (and associated dust-related effects to soils, permafrost, water resources, wetlands and vegetation, wildlife forage resources, visual resources, etc.) • Fewest emissions from vehicles • Least disturbance of wildlife and birds • Least amount of vehicle noise and visual contrast from vehicles and associated dust • Least impact to subsistence resources and access
Fixed-wing aircraft trips	• Least potential for strikes of birds

Project Component	Rationale for Selection
	• Fewest emissions from aircraft • Least disturbance of wildlife and birds • Least amount of air traffic noise and visual contrast from aircraft • Least impact to subsistence resources
Helicopter trips	• Least potential for strikes of birds • Fewest emissions from aircraft • Least disturbance of wildlife and birds • Least amount of air traffic noise and visual contrast from aircraft • Least impact to subsistence resources
Acres of screeding	• Least amount of suspended sediment and turbidity, which could affect water resources, fish, birds, marine mammals, subsistence resources, and subsistence hunting • Least amount of habitat alteration for fish, birds, and marine mammals • Least in-water and airborne noise and thus least disturbance and displacement of fish, birds, and marine mammals • Least injury and mortality of fish in the screeding footprint • Fewest emissions from screeding
Gravel fill in the marine area	• No permanent marine habitat loss or alteration for fish, birds, and marine mammals • Least in-water and airborne noise and thus least disturbance and displacement of fish, birds, and marine mammals • Least injury and mortality of fish in the fill footprint • Fewest emissions from module delivery

The decision in this ROD emphasizes balanced and environmentally responsible development and includes protections for physical, cultural, and biological resources. In accordance with ANILCA Section 810, this ROD also addresses local residents' concerns regarding protection of their subsistence way of life and the subsistence resources on which they depend through the application of numerous lease stipulations, BMPs or ROPs, design features, and new mitigation measures that provide protection for subsistence resources and uses.

The Project would lead to increased revenues for the State of Alaska and North Slope Borough resulting from federal royalties and state and local taxes totaling approximately $6 billion as well as increased federal revenues totaling approximately $5 billion (see FEIS Table 3.15.4, *Summary of State, Federal, and Borough Revenues from the Project*). Pursuant to the NPRPA, 50% of royalties from the production of oil and gas on federal lands in the NPR-A is paid to the State of Alaska. Local residents and communities will benefit indirectly from revenues associated with the development on federally managed lands that would accrue to the State of Alaska. Under the NPRPA, in allocating its 50% share of federal revenues from oil and gas development on federal lands in the NPR-A, the State must give priority consideration to use by those communities most impacted by such development, which it does through its NPR-A Impact Grant Program. Construction of Project facilities would occur over approximately 9 years and employ up to 1,650 seasonal workers (peak) and an average of 373 annual workers. Once operational, the Proponent estimates that the Project will directly employ approximately 406 full-time employees.

5.0 PUBLIC INVOLVEMENT

An essential step in the NEPA process is public involvement, which provides an opportunity for the public and agencies to express their views and help identify issues to be addressed in the EIS. Consideration of comments received on the Draft EIS (DEIS) and the Supplement to the DEIS (SDEIS) were provided in the FEIS in Appendix B (Public Engagement and Comment Response).

5.1 Public Notice

Public Notice dates:

- Notice of Intent: August 8, 2018
- Notice of Availability of DEIS: August 30, 2019
- Notice of Availability of SDEIS: March 26, 2020
- Notice of Availability of FEIS: August 14, 2020

Public Notice periods:

- Public scoping: August 8, 2018, to September 30, 2018
- Public comment on DEIS: August 30, 2019, to October 29, 2019
- Public comment on SDEIS: March 26, 2020, to May 4, 2020

5.2 Public Meetings

A Notice of Intent to prepare an EIS was published in the *Federal Register* (83 FR 38725) on August 8, 2018. The open scoping period was held from August 8, 2018, through September 30, 2018, to gather stakeholder input regarding the Project. Public scoping meetings were held in Anaktuvuk Pass, Anchorage, Atqasuk, Fairbanks, Nuiqsut, and Utqiaġvik (Barrow) between August 20, 2018, and September 18, 2018. A community open house was also held in Nuiqsut on November 1, 2018. Scoping submissions and issues raised, which informed the analysis in the EIS, are described in Appendix B.1 (*Scoping Process and Comment Summary*) of the FEIS.

On August 30, 2019, a Notice of Availability of the DEIS was published in the *Federal Register* (84 FR 45801) announcing the public comment period for the DEIS, which ended on October 29, 2019. The public meeting process provided the opportunity to invite potentially affected and interested individuals, agencies, and groups to help:

- Share information and identify concerns about the Proposed Action
- Define a range of alternatives
- Determine and define the scope of issues to examine
- Identify other environmental and consultation requirements
- Gather additional information regarding potential effects of the Proposed Action
- Inform and identify potentially interested parties

Public meetings were held in Anaktuvuk Pass, Anchorage, Atqasuk, Fairbanks, Nuiqsut, and Utqiaġvik. A total of 266 people attended the public meetings for the DEIS in September and October 2019.

On March 26, 2020, a Notice of Availability of the SDEIS was published in the *Federal Register* (85 FR 17094) announcing the public comment period for the SDEIS, which ended on May 4, 2020. Public meetings were held online and via telephone on April 16, 21, and 23, 2020. The dates, locations, and official transcripts of the public meetings are provided on BLM's Willow MDP ePlanning website. Approximately 400 attendees participated in these meetings via Zoom, of which about 10 people registered and attended by phone only. More than 2,000 people viewed the meetings through Facebook Live.

Pursuant to ANILCA Section 810(a)(1) and (2), the Nuiqsut DEIS public meeting and the virtual online SDEIS public meetings also included public hearings for comments regarding the Project's potential impact to subsistence resources and activities.

On August 14, 2020, a Notice of Availability of the Final EIS was published in the *Federal Register* (85 FR 49677), initiating a 30-day pre-ROD waiting period that ended on September 13, 2020. On September 10, 2020, BLM received a comment letter from the Environmental Protection Agency supporting several mitigation measures analyzed in the EIS and advocating adoption of these measures in the ROD. The BLM considered the Environmental Protection Agency's comments prior to issuing this ROD; no additional comment letters were received after publication of the Final EIS.

5.3 Other Public Involvement

BLM published the Project documents on its website (https://eplanning.blm.gov/eplanning-ui/project/109410/510) to provide information, maps, and documents for the public about the Project and the NEPA process and to give meeting notices. The website also provided links to other useful online resources.

5.4 Evaluation and Consideration of Comments Received

Numerous comments were received from local, state, and federal agencies; tribes; and the public on the DEIS and the SDEIS. Comments received on the DEIS and SDEIS are summarized and considered in Appendices B.2 (Draft EIS Comments and BLM Responses) and B.3 (Supplement to the Draft EIS Comments and BLM Responses) of the FEIS, respectively. In total, 935 submissions were received during the DEIS public comment period, including submissions from public hearings/meetings (including verbal testimony and comment forms). A total of 31,015 submissions were received during the SDEIS public comment period. These submissions generated a total of 1,086 substantive comments.

6.0 RELATED LAWS AND POLICIES

6.1 Alaska National Interest Lands Conservation Act

ANILCA Section 810 provides that no public land uses which would significantly restrict subsistence uses shall be effected until the federal agency gives the required notice and holds a hearing in accordance with ANILCA Section 810(a)(1) and (2) and makes the three determinations required by ANILCA Section 810(a)(3)(A), (B), and (C). The three determinations that must be made are that 1) such a significant restriction of subsistence use is necessary and consistent with sound management principles for the use of public lands; 2) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other such disposition; and 3) reasonable steps will be taken to minimize adverse impacts to subsistence uses and resources resulting from such action (16 USC 3120(a)(3)(A), (B), and (C)).

The ANILCA Section 810 analysis, findings, and BLM's determinations are included in FEIS Appendix G, *Alaska National Interest Lands Conservation Act Section 810 Analysis.* BLM's findings and determinations are briefly summarized here; for additional details, see FEIS Appendix G. BLM's findings conclude that the Project is not expected to result in a large reduction in the abundance (population level) of caribou or any other subsistence resource. However, the evaluation concludes that the Project may significantly restrict subsistence uses for the community of Nuiqsut due to a reduction in the availability of resources caused by the alteration of their distribution and the limitation on subsistence user access to the area. Module Delivery Option 3, in combination with Alternative B, would not result in any additional significant restriction of subsistence uses for communities in or near the Project area.

BLM's findings conclude that the cumulative effects of current and future activities may significantly restrict subsistence uses for Nuiqsut, Utqiaġvik, Anaktuvuk Pass, Atqasuk, and Wainwright due to a reduction in the abundance of caribou caused by the alteration of their distribution and the degradation of habitat; for Nuiqsut, Utqiaġvik, Wainwright, and Point Lay due to a reduction in availability of marine mammals caused by alteration of their distribution; and for Nuiqsut due to a reduction in the availability of caribou and limitations on subsistence user access to the area.

Because the final ANILCA Section 810 evaluation concludes that BLM's selected alternative, Alternative B, may significantly restrict subsistence uses, including in the cumulative case, BLM is required to make the three determinations required by ANILCA Section 810(a)(3)(A), (B), and (C).

BLM has determined that the significant restrictions that may occur under Alternative B, in combination with Module Delivery Option 3, when considered together with all the potential impacts of the action, including the cumulative case, are necessary and consistent with sound management principles for the use

of these public lands and BLM's obligations as established under the statutory directives in the NPRPA, as amended; FLPMA; and other applicable laws.

BLM has determined that Alternative B, combined with Module Delivery Option 3, involves the minimal amount of public lands necessary to fulfill the purpose and need of the Proposed Action.

Numerous protective measures and Project design elements are described in detail in Willow MDP FEIS Section 3.16.2.1.1 (Applicable Lease Stipulations and Best Management Practices) and Willow MDP FEIS Appendix I.1. They are also provided as Appendix A of this ROD. Given these numerous protective measures that would apply to the Project to reduce subsistence impacts, BLM has determined that reasonable steps will be taken to minimize adverse impacts to subsistence uses and resources from the Proposed Action.

6.2 Endangered Species Act

Section 7(a)(2) of the ESA requires federal agencies to consult with USFWS and National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under the ESA, or destroy or adversely modify their critical habitat. Pursuant to Section 7 of the ESA (16 USC 1531 et seq.), BLM consulted with both NMFS and USFWS on ESA-listed species that may occur within the action area.

On October 16, 2020, USFWS determined that the Project may affect, but is not likely to adversely affect, listed species in the action area and is not likely to adversely modify their critical habitats.

On July 15, 2020, the NMFS Letter of Concurrence concurred with BLM's determination that the Project will not likely adversely affect the listed species in the action area and would not adversely modify their critical habitats.

6.3 Clean Air Act

The Clean Air Act (CAA) (42 USC 7401–7671 Section 176(c)) General Conformity Rule review was carried out. The proposed permit action is not in a CAA non-attainment area, and the conformity determination requirements of the CAA would not apply to the Project at this time. Any later indirect emissions generally cannot be practicably controlled by BLM. For these reasons, a conformity determination is not required for this permit action.

6.4 Clean Water Act

Pursuant to Section 401 of the Clean Water Act (CWA) (33 USC 1341), a Section 404 CWA permit is not valid until a Section 401 Water Quality Certification (WQC) has been issued or the requirement for the certification has been waived. For the purposes of the Project, the State of Alaska administers Section 401 WQC. Conditions of the Section 401 WQC would become conditions of the final U.S. Department of the Army permit.

The Alaska Department of Environmental Conservation will review the Project pursuant to Section 401 of the CWA and would issue a WQC prior to BLM authorizing actions under the ROD for the discharge of the dredged and fill material for the Willow MDP.

6.5 Coastal Zone Management Act

By operation of Alaska State law, the federally approved Alaska Coastal Management Program expired on July 1, 2011, resulting in a withdrawal from participation in the Coastal Zone Management Act's (16 USC 1456(C)) National Coastal Management Program. The Coastal Zone Management Act federal consistency provision, Section 307, no longer applies in Alaska. The *Federal Register* Notice was published July 7, 2011 (76 FR 39857).

6.6 Fish and Wildlife Coordination Act

The Migratory Marine Game-Fish Act (16 USC 760c–760g), the Fish and Wildlife Coordination Act (16 USC 661–666c), and other acts express the will of the U.S. Congress to protect the quality of the aquatic environment as it affects the conservation, improvement, and enjoyment of fish and wildlife resources. Under the Fish and Wildlife Coordination Act, any federal agency that proposes to control or modify any body of water must first consult with USFWS or NMFS, as appropriate, and with the head of the appropriate state agency exercising administration over the wildlife resources of the affected state. Coordination with USFWS, NMFS, and the State of Alaska Department of Fish and Game and completion of the process and analyses contained within the FEIS and ROD is required. A signature by the authorizing official completes BLM's Fish and Wildlife Coordination Act responsibilities.

6.7 Materials Act

Pursuant to 43 CFR 3601.3, BLM's authority to dispose of sand, gravel, and other mineral and vegetative materials that are not subject to mineral leasing or location under mining laws is the Act of July 31, 1947, as amended (30 USC 601 et seq.), commonly referred to as the Materials Act. This authority applies to the sale and free use of these materials. Mineral materials disposal is managed under BLM regulations at 43 CFR 3600. Under these regulations, site-specific mining and reclamation plans are required before BLM can permit specific disposal actions.

6.8 Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NMFS on any action authorized, funded, or undertaken that may adversely affect Essential Fish Habitat (EFH). Marine EFH occurs throughout the Beaufort Sea for pink salmon, chum salmon, Chinook salmon, sockeye salmon, coho salmon, saffron cod, and Arctic cod. The Project could affect marine EFH due to screeding at Oliktok Dock and the barge lightering area.

EFH is assessed in Section 3.10 (*Fish*) of the FEIS. The EFH assessment that describes the Project's potential adverse effects on EFH in accordance with the Magnuson-Stevens Fishery Conservation and Management Act has been reviewed by NMFS and its concurrence is in the administrative record.

6.9 Mineral Leasing Act

Under Section 28 of the MLA (30 USC 185) and 43 CFR Part 2880, BLM has the authority to issue right-of-way (ROW) grants for oil or natural gas pipelines or related facilities to cross BLM-managed public lands. The Proponent would need to obtain a ROW grant and temporary use permits from BLM for crossing BLM-managed lands. The Proponent will submit an application to BLM for a ROW across federal lands. In addition, Section 28(p) of the MLA, 30 USC 185(p), requires BLM to consider the colocation of ROWs to the extent practicable in order to minimize adverse environmental impacts.

6.10 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires each federal agency, prior to any federal or federally assisted or funded undertaking, to take into account the effect of its proposed undertaking on any property included in or eligible for the National Register of Historic Places (NRHP) (hereafter called historic properties).

Consultation under NHPA Section 106 was initiated on November 23, 2018, with the Alaska State Historic Preservation Office and tribes. BLM, as the lead federal agency for Section 106 obligations under the NHPA, and in consultation with the State Historic Preservation Officer, the Alaska Department of Natural Resources, the Advisory Council on Historic Preservation, and the Proponent, has established the undertaking's area of potential effects (APE), as defined in 36 CFR 800.16(d), which encompasses direct and indirect effects on historic properties for alternatives carried forward for detailed analysis in the FEIS. The APE applies to all lands, regardless of management status, that may be affected by the mine

site, pipeline corridor, transportation system, staging areas, access roads, or other infrastructure related to the Project undertaking.

BLM, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation have determined that a Programmatic Agreement for the Project is not needed because historic properties will be avoided.

BLM has completed coordination and consultation pursuant to Section 106 of the NHPA (16 USC 470 et seq.). The Project would not adversely affect sites listed in, or eligible for listing in, the NRHP or of other national, state, or local significance. Consultation under and compliance with Section 106 of the NHPA have been concluded.

6.11 Executive Order 11988 (Floodplain Management)

Executive Order (EO) 11988 requires an agency to provide leadership and to take action to minimize the impact of floods on human safety, health, and welfare and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. In carrying out activities required by EO 11988, the agency has the following responsibilities:

1. Evaluate the potential effects of any actions that may take place in a floodplain
2. Ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management
3. Prescribe procedures to implement the policies and requirements of EO 11988

Additional requirements are as follows:

4. Before taking an action, each agency shall determine whether the Proposed Action will occur in a floodplain and the evaluation required will be included in the EIS prepared under NEPA.
5. If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplain. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this EO requires siting in a floodplain, the agency shall, prior to taking action,
    a. design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations, and
    b. prepare documentation explaining why the action is proposed to be located in the floodplain.

The Project would place gravel fill in the 50- or 100-year floodplains of Fish (Uvlutuuq) Creek, Judy (Kayyaaq) Creek, Judy (Iqalliqpik) Creek, Willow Creek 2, Willow Creek 4, Willow Creek 4A, Willow Creek 8, and the Ublutuoch (Tiŋmiaqsiuġvik) River, as described in Section 3.8.2.3.3 (*Gravel Infrastructure*) of the FEIS.

The long-term effects, both direct and cumulative, on floodplains of ConocoPhillips's development on BLM-managed lands, as approved in this ROD, are expected to be minor and would be mitigated to the greatest extent practicable. Similar to wetlands, total avoidance of floodplains is impossible due to the geography and hydrologic features of the area.

This decision avoids and minimizes impacts to floodplains by siting facilities to avoid unnecessary stream crossings (such as placing BT4 on the south side of the Kalikpik River to avoid crossing the river) and by incorporating design features (such as siting the mine pits, multi-season ice pads, and most of the single-season ice pads outside the floodplain) to minimize impacts. The Project will use bridges at larger stream crossings and culverts at smaller stream crossings.

Gravel infrastructure would be permanently located in the 50- or 100-year floodplains of Fish (Uvlutuuq) Creek, Judy (Kayyaaq) Creek, Judy (Iqalliqpik) Creek, Willow Creek 2, Willow Creek 4, Willow Creek 4A, Willow Creek 8, and the Ublutuoch (Tiŋmiaqsiuġvik) River (Figures 3.8.3 and 3.8.4 of the FEIS). Although the floodplain at most of the stream crossings is limited to a narrow area (barely visible in the figures), the floodplains of Fish (Uvlutuuq) Creek and Judy (Iqalliqpik) Creek are wider and would encompass the gravel road on either side of the crossing. These two streams would also have boat ramps constructed in their floodplains. If gravel roads, pads, or boat ramps block or restrict the flow of surface water during spring breakup, they may 1) increase the depth and duration of water impoundment, 2) increase thermokarsting, 3) cause a change in flow direction, 4) cause channel instability or a change in alignment, 5) result in erosion of the tundra or a stream channel, or 6) result in deposition of sediment on the tundra or in a stream channel. Effects 1 through 3 would occur on the upstream side of the road or pad; Effects 4 through 6 could occur on either the upstream or the downstream side of the road or pad. If the blockages were fixed within the year in which they were first observed, did not overtop the road or pad, and did not drain along the upstream side of the road, the resulting impact of the blockage would be measurable but would not require rehabilitation. However, thermokarsting due to water impoundments resulting from blockages would create a depression that would last indefinitely. If the blockage caused a change in flow direction, channel instability, or erosion of the tundra or stream channel, or resulted in deposition of sediment on the tundra or in the stream channel, the impact would be measurable and require rehabilitation. The impact could be visible for many years, even with rehabilitation.

BMP or ROP E-3 would require that culverts maintain free passage of marine and anadromous fish. ConocoPhillips will be required to provide annual surveillance of bridge, culvert, and pipeline river crossings for the first 3 years to confirm that structures are functioning properly and to provide maintenance as required and at least once every 3 years thereafter.

Specific measures to protect water resources include requirements that roads, pipelines, and water crossings be designed to maintain existing hydrology, including during flood periods. Also, gravel roads, culverts, and bridges must be designed with erosion control mechanisms. In addition to BLM lease stipulations and BMPs or ROPs, Project activities that could impact water resources will be subject to federal, state, and local permit requirements. Thus, the facilities authorized in this ROD will avoid impacts to floodplains to the maximum extent practicable and will have minimal to negligible impacts on the functions and values of floodplains.

6.12 Executive Order 11990 (Wetlands)

EO 11990 requires that BLM consider factors relevant to the Project's effect on the survival and quality of wetlands. Factors to be considered include the following:

- Public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion
- Maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources
- Other uses of wetlands in the public interest, including recreation and scientific and cultural uses

BLM is required to avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds

1. there is no practicable alternative to such construction and
2. the Proposed Action includes all practicable measures to minimize harm to wetlands that may result from such use. In making this finding, the head of the agency may take into account economic, environmental, and other pertinent factors.

Project facilities will be located entirely on the Arctic coastal plain (ACP), as depicted in Figure 3.9.2 of the FEIS. Wetlands occupy 94% of the field-verified wetlands analysis area (the Willow area), and freshwater waters of the U.S. occupy an additional approximate 5% (Table 3.9.1 of the FEIS). The most common wetland type in the wetland analysis area is Palustrine Emergent Persistent/Scrub-Shrub Broad-Leaved Deciduous Seasonally Saturated (31% of the analysis area). Table E.9.1 in Appendix E.9 (Vegetation and Wetlands Technical Appendix) of the FEIS demonstrates that wetland types in the field-verified wetlands analysis area are not unique and occur throughout the analysis area and the ACP.

Alternative B will result in 611.9 acres of wetland loss due to gravel fill or excavation (Table E.9.2 in Appendix E.9 of the FEIS). Direct vegetation damage and soil compaction may occur from ice infrastructure over an additional 5,223.9 acres (Table E.9.5 in Appendix E.9 of the FEIS). Indirect changes to wetland composition due to dust and gravel spray will occur over approximately 3,338.3 acres of wetlands (Table E.9.6 in Appendix E.9 of the FEIS). Loss of wetlands and changes to wetland composition will be long term; vegetation damage and soil compaction will be short to medium term depending on the degree of saturation of soils. Flooded and wet tundra wetlands generally exhibit few or no effects from ice road construction (Felix and Raynolds 1989; Yokel, Huebner et al. 2007; Yokel and Ver Hoef 2014), while some areas of moist tundra still show signs of disturbance after 12 years (Yokel and Ver Hoef 2014). The geographic extent is local: direct fill and indirect changes to wetland composition will occur in no more than 0.2% of any of the five (10-digit) hydrologic unit codes in which the fill will occur (Tables E.9.4 and E.9.7 in Appendix E.9 of the FEIS). Because virtually the entire ACP consists of wetlands, it is not possible to produce the oil reserves on ConocoPhillips's leases without impacting wetlands.

Wetlands impacts will be mitigated through BLM lease stipulations, BMPs or ROPs, and design features, listed in Appendix A of this ROD. These include measures regarding the following:

- Waste management, spill prevention and response, and hazardous materials emergency contingency plans
- Winter travel and protection of soil, vegetation, and streams
- Facility design and requirements that permanent facilities minimize footprint
- Timing of extraction of gravel and construction of gravel roads, pads, and pipelines to use ice roads, thus minimizing potential impacts to wetlands
- Dust control
- Incorporation of the findings of fish surveys and hydrologic modeling into the design of bridges and culverts

Because of these mitigations, no significant impacts are expected that would affect public health, safety, and welfare through changes in the supply, quality, recharge or discharge, and pollution of water or flood and storm hazards or sedimentation and erosion.

This decision includes all practicable measures to minimize harm to wetlands when considering all technical, economic, environmental, and other pertinent factors. Although Alternative D would have a smaller gravel footprint (and thus fewer acres of wetland loss) than Alternative B, it would result in additional ground and air traffic that would have additional effects to numerous other resources (air quality, visual resources, noise, birds, terrestrial mammals, marine mammals, subsistence, public health, and environmental justice). These tradeoffs were considered in making this decision.

Therefore, BLM finds that there is currently no practicable alternative to construction of the Project in wetlands and that all practicable measures to minimize harm to wetlands have been taken, given the technical, economic, and environmental factors that must be weighed.

6.13 Executive Order 13112 (Invasive Species)

Invasive species are addressed in accordance with EO 13112 in Sections 3.9 (Wetlands and Vegetation), 3.10, 3.13 (Marine Mammals), and 3.19 of the FEIS.

6.14 Executive Order 12898 (Environmental Justice)

EO 12898 directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal decisions on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. See Section 3.17 (*Environmental Justice*) of the FEIS.

The FEIS identified adverse impacts to the community of Nuiqsut, which meets the demographic characteristics to be qualified as a minority population. Impacts to subsistence and sociocultural systems that were considered in the finding of impacts for environmental justice were decreased resource availability and decreased harvester access (Section 3.17.3.3.1, *Subsistence and Sociocultural Systems*, of the FEIS).

Resource availability could decrease due to loss or alteration of habitat for birds, fish, caribou, and other terrestrial mammals; disturbance or displacement of animals; or direct injury or mortality. However, the decrease would not have population-level effects on subsistence resources harvested within or downstream from the Project area.

Harvester access would be adversely affected by the construction of roads through areas used for harvesting wolf, wolverine, caribou, and geese. As noted in Section 3.16, *Subsistence and Sociocultural Systems*, of the FEIS, at least one-third of harvesters that use the Project area are likely to avoid the affected area during at least 1 year during construction. During operations, harvester access would be adversely affected by roads through areas used for harvesting. Some Nuiqsut caribou hunters use trucks to access subsistence harvest areas and may use roads constructed under this alternative. This could increase competition along the road and deflect caribou from the community's traditional harvest area, reducing success for those continuing to use traditional areas. Some subsistence harvesters also avoid developed areas due to concerns about security protocols and an assumed lack of resources around these areas.

The effects on subsistence and sociocultural systems may be highly adverse and disproportionately borne by the Nuiqsut population.

Impacts to public health that were considered in the finding of impacts for environmental justice were Project employment opportunities and dividend income, increased stress, and impacts to subsistence (Section 3.17.3.3.3, *Public Health*, of the FEIS). The Project would result in additional employment opportunities in Nuiqsut. Although most construction jobs would be filled by non-locals, even a small number of additional jobs would positively impact the community's relatively small labor force. Project construction would increase household incomes for Nuiqsut residents employed with the Project, and dividend income would also increase for Arctic Slope Regional Corporation and Kuukpik shareholders if these corporations have subsidiaries working on the Project.

Not all Nuiqsut residents would find jobs or receive Alaska Native Claims Settlement Act corporation dividends, resulting in the potential for social tensions regarding an uneven distribution of money in the community. The Project would increase air and noise emissions and human activity in Nuiqsut's subsistence use area. This could increase stress in some Nuiqsut residents and lead to or exacerbate mental health issues such as anxiety and depression. As discussed in BLM (2018), rapid modernization and development, as well as other multiple stressful conditions, including significant changes in diet, housing, and traditional culture, has led to negative health outcomes, including suicide.

Reduced subsistence harvester access or subsistence resource availability would adversely affect community health by reducing the availability of subsistence foods and increasing the dependence on

store-bought foods, increasing food insecurity. Among all North Slope Borough communities, a higher percentage of Nuiqsut households use subsistence resources for more than half of their diet (NSB 2016).

The effects on public health in Nuiqsut may be highly adverse and disproportionately borne by the Nuiqsut population.

In addition to the direct and indirect effects of the Project on environmental justice, the cumulative effects of the Project (considered in combination with past and future projects) on subsistence, sociocultural systems, and public health may be highly adverse and would be disproportionately borne by populations from Nuiqsut, Utqiaġvik, Anaktuvuk Pass, Atqasuk, Point Lay, and Wainwright. These effects are described in Section 3.19.13, *Cumulative Impacts to Environmental Justice*, of the FEIS and would be long term and of high intensity.

Stipulations in the federal leases and BMPs or ROPs avoid or mitigate many of these impacts. Relevant stipulations include, but are not limited to, those that require ready access to spill cleanup materials, minimization of flights in the Project area during the peak caribou hunting period, spill response training, the separation distance between roads and pipelines (reducing the potential of combined facilities to obstruct caribou movement), and consultation with subsistence users.

The Project's existing mitigation measures, design features, and additional mitigation measures contribute to avoiding, minimizing, or mitigating impacts to subsistence and public health, including, but not limited to the following

- using a non-reflective finish on all pipelines
- establishing speed limits, pull-outs, and caravanning requirements on Project roads
- minimizing helicopter flights during peak caribou harvesting periods

6.15 Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

BLM conducted government-to-government consultation with tribes and Alaska Native Claims Settlement Act consultation with Alaska Native corporations in accordance with EO 13175. See Section 1.10.4 (*Native Consultation*) of the FEIS.

6.16 Executive Orders 13212 and 13302 (Energy Supply and Availability)

The review was expeditious and other actions were taken to the extent permitted by law and regulation to complete this energy-related (including pipeline safety) project while maintaining safety, public health, and environmental protection.

7.0 OTHER AUTHORIZATIONS

For other state and local authorizations that apply to the Project, see Appendix C of the FEIS.

8.0 FINAL AGENCY ACTION

8.1 Bureau of Land Management Approval

I recommend approval of this ROD to select Alternative B (Proponent's Project) and Module Delivery Option 3 (Colville River Crossing), as described above and subject to the terms and conditions for the Project described in Appendix A of this ROD.

10/26/2020

Chad Padgett
State Director
Bureau of Land Management, Alaska

Date

8.2 Departmental Approval

I hereby approve this ROD to select Alternative B (Proponent's Project) and Module Delivery Option 3 (Colville River Crossing), as described above and subject to the terms and conditions for the Project described in Appendix A of this ROD.

My approval of this Decision constitutes the final decision of the U.S. Department of the Interior and, in accordance with the regulations at 43 CFR 4.410(a)(3), is not subject to appeal under departmental regulations at 43 CFR 4.

10/26/2020

David L. Bernhardt
Secretary of the Interior

Date

9.0 REFERENCES

BLM. 2018. *Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth Two Development Project – Final Supplemental Environmental Impact Statement*. Anchorage, AK.

Felix, N.A., and M.K. Raynolds. 1989. The effects of winter seismic trails on tundra vegetation in northeastern Alaska, U.S.A. *Arctic and Alpine Research* 21(2):188–202.

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Yokel, D., D. Huebner, R. Meyers, D.A. Nigro, and J.M. Ver Hoef. 2007. *Offsetting Versus Overlapping Ice Road Routes from Year to Year: Impacts to Tundra Vegetation*. Anchorage, AK: BLM.

Yokel, D., and J.M. Ver Hoef. 2014. *Impacts to, and Recovery of, Tundra Vegetation from Winter Seismic Exploration and Ice Road Construction*. Anchorage, AK: BLM.

Record of Decision

Willow Master Development Plan

Appendix A
Mitigation Measures

October 2020

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List of Tables

List of Acronyms

AAQS	ambient air quality standards
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
BLM	Bureau of Land Management
BMP	best management practice
BT2	Bear Tooth 2 drill site
BT3	Bear Tooth 3 drill site
CPAI	ConocoPhillips Alaska, Inc.
CWAT	community winter access trail
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEIS	Final Environmental Impact Statement
HDD	horizontal directional drilling
IAP	Integrated Activity Plan
ITR	Incidental Take Regulation
LS	lease stipulation
MDP	Master Development Plan
mph	miles per hour
MTI	module transfer island
NMFS	National Marine Fisheries Service
NPR-A	National Petroleum Reserve in Alaska
NSB	North Slope Borough
PM	particulate matter
Project	Willow Master Development Plan Project
ROD	Record of Decision
ROP	Required Operating Procedure
ROW	right-of-way
USFWS	U.S. Fish and Wildlife Service
VSM	vertical support member
WSE	water surface elevation

1.0 APPLICABLE LEASE STIPULATIONS, BEST MANAGEMENT PRACTICES, AND DESIGN FEATURES

1.1 Lease Stipulations and Best Management Practices

The 2013 National Petroleum Reserve in Alaska (NPR-A) Integrated Activity Plan (IAP)/Environmental Impact Statement (EIS) Record of Decision (ROD) established performance-based lease stipulations (LSs) and required best management practices (BMPs) that apply to oil and gas activities in the NPR-A (BLM 2013) to avoid and minimize impacts. The Bureau of Land Management (BLM) is in the process of revising the 2013 IAP, having issued a Final NPR-A IAP/EIS in June 2020 (BLM 2020). The 2020 NPR-A IAP/EIS analyzes potential changes to BMPs currently applicable to oil and gas activities in NPR-A under the 2013 ROD (described as Required Operating Procedures [ROPs] in the 2020 NPR-A IAP/EIS). As described in Section 2.5.12 (Compliance with Bureau of Land Management Lease Stipulations and Best Management Practices) of the Willow Master Development Plan (MDP) Final EIS (FEIS), upon issuance of the upcoming ROD for the new IAP, ROPs adopted therein will replace BMPs in the 2013 ROD as applied to subsequent BLM project authorizations including for the Willow MDP Project (Project). Full text of the potential changes to BMPs is provided in BLM (2020). The FEIS Appendix I.1 (Avoidance, Minimization, and Mitigation), Table I.1.1 summarizes both the current 2013 BMPs and the proposed ROPs described in the 2020 NPR-A IAP/EIS that would apply to the Project if adopted in the upcoming ROD for the new IAP. Although the 2020 NPR-A IAP/EIS also analyzes potential changes to LSs currently applicable to NPR-A leases issued under the 2013 ROD, new LSs adopted by the upcoming IAP ROD will not replace existing LSs contained in the leases comprising the Project area because, unlike BMPs and ROPs, LSs are contractually fixed at the time of lease issuance.

1.2 Design Features

ConocoPhillips Alaska, Inc. (the Proponent), has incorporated measures into the Project design to avoid and minimize impacts. These are listed in Table I.1.2 of FEIS Appendix I.1 and, like LSs and BMPs or ROPs, are also applicable to the Project. Some of these measures are similar to NPR-A LSs and BMPs or ROPs or other requirements and are included to show the Proponent's commitment to adhering to them. The Proponent may propose additional measures in subsequent permitting phases.

2.0 ADDITIONAL MITIGATION MEASURES ADOPTED

In addition to Project design features, LSs, and BMPs or ROPs applicable to the Project, the following additional mitigation measures are hereby adopted to further avoid or reduce impacts from the Project. These measures are discussed in the relevant resource sections in the Willow MDP FEIS, Chapter 3.0, *Affected Environment and Environmental Consequences*, and are summarized in Appendix I, *Avoidance, Minimization, and Mitigation Technical Appendix*, of the FEIS. They were developed based on suggestions from cooperating agencies, stakeholders, public comments, and BLM staff.

The permittee may propose a deviation from these requirements/standards as described in the FEIS. If experience or additional study indicate that a requirement/standard is not achieving or is unlikely to achieve its protective objective, or will be less effective than the use of more recently proven technology or techniques, BLM may allow other measures to meet the objective. This will be accomplished at the activity-level permitting stage and under the terms of the LS or BMP/ROP deviation process outlined in the applicable NPR-A IAP/EIS ROD.

Some clarifications and minor modifications were made to the additional mitigation measures in this ROD and may not verbatim match the additional mitigation measures described in the FEIS. These clarifications and modifications or any reorganization made to correct sentence structure, grammatical errors, and wording, are non-substantive and not discussed below. Section 3.0 (Additional Mitigation Measures Not Adopted) of this appendix describes additional mitigation measures that were considered in the FEIS but are not adopted by this ROD. Any substantive changes to mitigation measures, for example mitigation measures that are not adopted in full, are also included in Section 3.0 of this appendix.

2.1 Air Quality

2.1.1 Measure 1: Fugitive Dust Control Plan

Objective**:** Control fugitive particulate matter (PM) emissions from the Project.

Requirement/Standard**:** Implement a Fugitive Dust Control Plan to mitigate impacts from fugitive PM emissions from the Project. This plan will require regular watering of pads and unpaved roads, establish speed limits on gravel roads, and several other measures to reduce fugitive dust emissions and impacts. See FEIS Appendix I.3, *Dust Control Plan*, for additional details. (Although ROP M-5, if adopted in the ROD for the 2020 NPR-A IAP/EIS, would require a dust plan for areas of bare soil, it is focused on construction and mining; the Fugitive Dust Control Plan is focused on gravel roads and pads.) The Dust Control Plan details the frequency of compliance monitoring and reporting, as well as the frequency of control measures.

Potential Benefits and Residual/Unavoidable Impacts**:** Dust remains a concern on the North Slope and was a key issue during scoping. The dust-control efficacy rate used in the Project air quality modeling assumed that Proponent would provide a Dust Control Plan. Air quality modeling indicated that $PM_{2.5}$ would be 87% of ambient air quality standards (AAQS) at the Project site and 24% of AAQS in Nuiqsut. Modeling indicated that PM_{10} would be 57% of AAQS at the Project site and 8% of AAQS in Nuiqsut.

2.2 Noise

2.2.1 Measure 2: Flight Paths

Objective**:** Minimize effects of aircraft noise on Nuiqsut.

Requirement/Standard**:** Alter flight paths (fixed-wing and helicopter) to avoid Nuiqsut.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimize effects of aircraft noise on residents of Nuiqsut and subsistence users in the area.

2.2.2 Measure 3: Blasting Hours

Objective**:** Minimize effects of blasting noise on Nuiqsut residents.

Requirement/Standard**:** Limit blasting at the Tiŋmiaqsiuġvik mine site to the hours of 10 a.m. to 8 p.m., notify residents, and strive to adhere to a consistent daily schedule.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimize noise to hours when sleep would be least likely to be affected. Provide a stated window when noise from blasting would not occur, so that residents can plan activities accordingly.

2.3 Visual Resources

2.3.1 Measure 4: Visual Impact Management Plan

Objective**:** Minimize effects to visual resources from the Project.

Requirement/Standard**:** Include the following in the plan to minimize visual impacts (plan is required as per BMP or ROP E-17, as applicable): Use a dull finish on tall metal structures not otherwise painted, including but not limited to communications towers and drill rigs. This measure does not apply to ancillary, external building components, including but not limited to clamps, pipes, and vents.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimize effects to visual resources from the Project.

2.3.2 Measure 5: Project Lighting

Objective**:** Minimize light visible from outside of Project facilities.

Requirement/Standard**:** Minimize light visible from outside of Project facilities at all times of the year by using lighting fixtures with lamps contained within the reflector, only if 2013 IAP BMPs are applied. The Proponent's design measure 50 (Final EIS Appendix I.1, Table I.1.2) states that this will be done during the summer; *Measure 5: Project Lighting* expands that requirement to be year-round.

Implement lighting controls to turn off exterior lighting at satellite pads and other unoccupied facilities when personnel are not present, between August 1 and October 31.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimize light visible from outside of Project facilities to reduce contrast from glare and artificial lighting and reduce effects to visual aesthetics. This measure will also reduce effects to birds that may be disoriented or attracted to the light and mitigate the collision risk to birds.

2.4 Water Resources

2.4.1 Measure 6: Culvert, Bridge, and Pipeline Stream Crossings

Objective**:** Ensure Project culvert, bridge, and pipeline stream crossings are designed to adequately pass flood events and minimize likelihood of structure failure, erosion, backwatering, etc.

Requirement/Standard**:** FEIS Appendix E.8A (Water Resources Technical Appendix) provides detail about culvert, bridge, and pipeline design and how that influences potential effects to water resources. Additional measures to reduce impacts created by culvert, bridge, and pipeline crossings, will include:

1. Unless a more appropriate method is available, when estimating flood-peak discharge at locations within the Fish (Iqalliqpik) Creek, Judy (Iqalliqpik) Creek, and Ublutuoch (Tiŋmiaqsiuġvik) River basins, use a weighted average from a single station analysis of the BLM long-term monitoring station data on each of these streams and the Shell regression equations (Appendix E.8, *Water Resources Technical Appendix*). Weight the results of the two computations based on the uncertainty associated with each estimate.
2. As appropriate, consider both 1) snow- and ice-impacted conditions and 2) ice-free conditions in the hydraulic design of bridges, culverts, and pipeline river crossings. Cross-section data at the time of the peak stage and peak discharge that are available for many rivers and streams indicate that the water surface elevation (WSE) was affected by snow and/or ice blockage. Based on the available information, develop designs that will perform satisfactorily during the design event considering both the possibility of open water conditions and the possibility that snow and ice blockage is occurring at the time of the design event. At a minimum, the magnitude of the blockage used in the designs will be similar to the magnitude of the blockage that has been observed.
3. At a minimum, design stream culverts to perform satisfactorily for all flood events up to and including the 50-year event. The headwater-to-diameter ratio at the maximum design condition will be no greater than 1.0.
4. Identify the locations requiring cross-drainage culverts during spring breakup prior to construction, by noting all locations where water is flowing over the proposed alignment. This is necessary because it is often not possible to determine where water flowing in polygon troughs will cross the alignment during a summer or fall inspection. At the same time, identify the ends of the proposed culverts and the invert elevation of the ends of the culvert in order to maintain the flow in the historical flow path.
5. At a minimum, design road bridges to pass the 50-year flood-peak discharge with a minimum of a 3-foot freeboard (assuming snow and ice conditions have been considered in estimating the design WSE). Design for bridge foundation scour equal to the maximum scour depth produced by floods up through a magnitude equal to the 100-year flood event, and a geotechnical design practice safety factor of 2 to 3. Check the bridge design using a superflood and a geotechnical

design practice safety factor of 1. The superflood is defined as the 500-year event, 1.7 times the magnitude of the 100-year event, or the overtopping flood, whichever is the least. These are standard criteria used by Alaska Department of Transportation and Public Facilities for bridges on the North Slope in non-designated flood hazard areas.

6. At a minimum, design pipeline river crossings to perform satisfactorily for all floods up to and including the 200-year event (including crossings on bridges or vertical support members [VSMs]). This is the magnitude of the design event that has typically been used for common carrier pipelines on the North Slope and a higher level of design than is being proposed for the Project.
7. Start bridge and culvert hydraulic computations sufficiently downstream so that the downstream boundary assumptions do not affect the performance of the proposed design. Consider the U.S. Army Corps of Engineers (1986) report "Accuracy of Computed Water Surface Profiles" in determining the location of the downstream boundary for hydraulic computations.
8. If the highest observed WSE or high water mark is higher than the predicted 50-year WSE at a culvert, bridge, or pipeline, re-evaluate the design WSE to confirm that snow and ice blockage and other details of the computation are accurate. Given the conditions on the North Slope, it is unlikely that high water marks from a 50-year flood or greater will be recognizable unless it occurred in the last 10 to 20 years. Additionally, it is improbable that a 1- to 5-year field program will experience a 50-year flood. It is more likely that snow and ice blockage greater than accounted for in the model used to predict the 50-year WSE or an error in the downstream boundary condition used in the model has occurred.
9. Pipelines will be designed with a minimum of 3 feet of freeboard for open water conditions and a minimum of 1 foot of freeboard for ice-affected conditions. Additional freeboard will be applied if uncertainty in the magnitude of the design discharge, hydraulic computations, or ice-affected analysis warrants.
10. Where an aboveground pipeline crossing is immediately upstream from a road, backwater from the road during the pipeline design event will be considered when setting the bottom of pipe elevation. Additionally, if the road is designed for a smaller flood than the pipeline, the changes in hydraulic conditions at the pipeline as a result of the road wash-out will be considered (i.e., changes in location of the concentrated flow and the impact on erosion at the VSMs).
11. Where an aboveground pipeline crossing is immediately downstream from a road, the impact of the road on where water will be flowing and the velocity of the water at the pipeline VSMs will be considered. Additionally, if the road is designed for a smaller flood than the pipeline, the changes in hydraulic conditions at the pipeline as a result of the road wash-out will be considered (i.e., changes in the location of the concentrated flow and the impact on erosion at the VSMs).

Potential Benefits and Residual/Unavoidable Impacts**:** This measure will minimize the likelihood of structure failure, erosion, backwatering, and potential spills (from pipeline crossing failures). Structure failures can impact a number of different human, physical, and biological resources.

2.4.2 Measure 7: Ice Infrastructure

Objective**:** Minimize effects to waterbodies from Project ice infrastructure.

Requirement/Standard**:** Breach ice road crossings sufficiently that ice from crossing will not contribute to ice jams or increase snow and ice blockage during spring breakup. Consistency with this requirement will generally be demonstrated by employing such measures as the following, or similarly protective measures implemented by the Proponent or its contractors:

- Ice slot widths proportional to channel widths.
- Ice slots wide enough to prevent damming and overbank flooding upstream of the crossing.

- Ice slots located along the crossing such that they connect the deep upper section of the channel with the deep lower section of the channel.
- Inspect ice slots during the early breakup season to ensure the bridge crossing is breached.
- Note problems with damming so that improved slotting measures can be used at the crossing in subsequent years.
- Avoid placing multi-season ice pads in floodplains (e.g., construction pads at the mine site).

This measure provides more details than BMP and ROP C-3, as applicable.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimizes potential effects of ice dams and backwatering due to ice in stream channels or floodplains.

2.4.3 Measure 8: Colville River Horizontal Directional Drilling Crossing Construction

Objective**:** Minimize effects to the Colville River from Project horizontal directional drilling (HDD) crossing.

Requirement/Standard**:** Prior to HDD construction, provide a monitoring and response plan for determining if drilling mud is being lost to formation or the surface (i.e., making it to the river bottom) during drilling. The plan will include:

1. Amount of drilling mud pumped into the drill hole.
2. Amount of drilling mud returned back up the drill hole.
3. Other monitoring measures such as turbidity monitoring in the river.
4. Response measures to be taken in the event mud is lost.

The plan will be submitted to the BLM Arctic District Authorized Officer for awareness 60 days prior to the start of HDD construction.

Potential Benefits and Residual/Unavoidable Impacts**:** This measure will ensure that any loss of drilling mud would be documented and crews would be prepared to respond. HDD drilling mud will be limited to water-based varieties, without petroleum products.

2.4.4 Measure 9: Surveillance of Stream Crossings

Objective**:** Ensure Project structures at stream crossing are functioning properly.

Requirement/Standard**:** Provide annual surveillance of bridge, culvert, and pipeline river crossings for the first 3 years to confirm that structures are functioning properly and provide maintenance as required. Results of this monitoring will be made available to the BLM Authorized Officer upon request. After the first 3 years surveillance would be done every 3 years.

Potential Benefits and Residual/Unavoidable Impacts**:** This measure will help ensure that bridge, culvert, and pipeline river crossings are functioning properly and help minimize effects to waterbodies (and potentially aquatic species, if present) should a maintenance issue occur. Required surveillance will ensure that issues are detected and addressed in a timely manner.

2.4.5 Measure 10: Option 3 Colville River Crossing Data and Adaptive Management Plan

Objective**:** Design and implement an ice bridge crossing of the Colville River that is informed by current ice and water data and allows passage of fish and water as needed, while minimizing effects to all resources.

Requirement/Standard**:** For the Ocean Point crossing site, prepare an Adaptive Management Plan based on baseline data that addresses potential unanticipated conditions and events, such as surface water flow blockages. The plan will describe measures to respond to such issues. The plan will be submitted to the BLM Authorized Officer for awareness prior to winter construction.

Potential Benefits and Residual/Unavoidable Impacts**:** An Adaptive Management Plan for the Colville River Crossing will minimize effects to the river and aquatic species, if they are present during construction. Because few data are available for Ocean Point, this measure requires a plan for how to manage for different conditions at the time of construction.

2.4.6 Measure 11: Boat Ramps Maintenance Plan

Objective**:** Minimize impacts to streams from Project boat ramps.

Requirement/Standard**:** Develop a maintenance plan for the boat ramps to ensure long-term viability and use of the site(s) while minimizing impacts to the adjacent waterbodies; initial plan to be submitted to the BLM Authorized Officer 60 days prior to initiating the first year's maintenance activities. Any substantive changes to the maintenance plan will be submitted to BLM prior to initiation of maintenance activities impacted by those changes. The plan will include such measure as:

1. Determine if erosion mitigation features or options in engineering design of boat ramp(s) are needed to prevent or minimize erosion potential at the boat ramp(s) and along adjacent riverbanks. Describe the evaluation that was completed to determine if erosion control is needed and what type of features are included in the final design.
2. Identify entity responsible for site maintenance.
3. Describe annual maintenance (grading) of parking pads, turning pads, access ramps, and road access.
4. Identify the gravel source for reinforcement of boat ramps and pads when necessary. Describe the location and quantity of gravel available and the frequency of how often the need for additional gravel will be evaluated.
5. Include regular clean-up of pads and surroundings, including back-haul of trash to suitable disposal site.
6. Describe that spills will be removed or mediated per the Project's spill plan.

Potential Benefits and Residual/Unavoidable Impacts**:** A maintenance plan for the boat ramps will increase the likelihood that the ramps will be maintained and reduce erosion or sedimentation of the stream.

2.5 Wetlands and Vegetation

2.5.1 Measure 12: Terrestrial Invasive Species Protections

Objective**:** Minimize transport or introduction of invasive species due to the Project.

Requirement/Standard**:** As part of the Invasive Species Prevention Plan required in BMP or ROP M-2, as applicable, include the following at a minimum:

1. Use existing vehicle and equipment wash stations and inspect vehicles and equipment for organic matter (e.g., invasive species) prior to moving equipment into the NPR-A to reduce the risk of introducing invasive species. Clean tires and wheel wells so they are free from soils, seeds, and plant parts.
2. Provide stations to clean footwear and gear so they are free from soils, seeds, and plant parts.
3. Provide training to employees and contractors in identification, control, and prevention of known invasive plant species.

Potential Benefits and Residual/Unavoidable Impacts**:** Invasive species can have broad-ranging effects on numerous species and habitats, food chains, and food resources for aquatic species. Prevention of introduction is typically easier than control once invasive species are established. This measure would help minimize the likelihood of transportation and introduction of terrestrial invasive species.

2.6 Fish

2.6.1 Measure 13: Overwintering Fish Habitat

Objective**:** Avoid crossing overwintering fish habitat with ice infrastructure.

Requirement/Standard**:** Identify overwintering fish habitat (maximum water depths, particularly free-water depth under ice cover) in the Colville River at Ocean Point and other streams in the NPR-A that might intersect the Option 3 (Colville River Crossing) ice road. Avoid crossings of potential overwintering habitat whenever practicable.

Potential Benefits and Residual/Unavoidable Impacts**:** Because overwintering fish habitat is limited on the North Slope, avoiding this limited resource would help minimize impacts to overwintering fish.

2.6.2 Measure 14: Aquatic Invasive Species Prevention

Objective**:** Prevent introduction or transportation of aquatic invasive species.

Requirement/Standard**:** Adopt National Marine Fisheries Service (NMFS) BMPs for invasive species prevention in essential fish habitat (Limpinsel, Eagleton et al. 2017) within the NPR-A:

1. Uphold fish and game regulations of the Alaska Board of Fisheries (AS 16.05.251) and Board of Game (AS 16.05.255), which prohibit and regulate the live capture, possession, transport, or release of native or exotic fish or their eggs.
2. Adhere to regulations and use BMPs outlined in the State of Alaska Aquatic Nuisance Species Management Plan (ADF&G 2002).

Potential Benefits and Residual/Unavoidable Impacts**:** Aquatic invasive species can have broad-ranging effects on numerous species and habitats, food chains, and food resources for aquatic species. Prevention of introduction is typically easier than control once invasive species are established. This measure would help minimize the likelihood of transportation and introduction of aquatic invasive species.

2.7 Birds

2.7.1 Measure 15: Bird Collisions

Objective**:** Minimize collisions of birds with Project infrastructure.

Requirement/Standard**:** Implement the following as much as practical:

1. Locate mast poles away from the pad edge.
2. Minimize the number and height of towers.
3. Restrict speed limits to minimize collision hazard and dust production (35 miles per hour [mph] except in areas of congestion, on bridges, and on pads, which will be slower).
4. Minimize barge and support vessel speed to reduce potential for bird strikes. (Vessels will travel at speeds slower than 14 knots [16 mph] as per the Endangered Species Act Section 7 consultation with U.S. Fish and Wildlife Service [USFWS].)

Reduce window reflectivity to minimize bird strikes by using window treatments on externally facing windows on buildings. This measure expands the visibility requirements in BMP or ROP E-10, as applicable.

Also see *Measure 5: Project Lighting*.

Potential Benefits and Residual/Unavoidable Impacts**:** Reducing the collision hazards will reduce mortality and injuries for all species of birds in the analysis area. Controlling incidental light and reducing reflectivity of windows will reduce the potential for collisions and energetic costs from attraction and disorientation of flying birds during migratory movements during low visibility. Bird collisions will continue to occur, but rates of injury and mortality will likely be decreased.

2.7.2 Measure 16: Bird Disturbance

Objective**:** Minimize bird habitat alternation and disturbance of birds from the Project.

Requirement/Standard**:** Implement the following:

1. Wherever practical, route ice roads around identified yellow-billed loon nesting sites and nesting lakes to avoid vegetation compaction at nesting sites and delayed melt-out of nesting lakes.
2. Haze birds out of the blast area at the mine site before blasting (if resident birds are present in winter).
3. Consistent with the goals of BMP or ROP E-18, as applicable, plan construction activities to minimize noise impacts as much as practical between June 1 and July 15 when birds on nests would be unable to move away from the disturbance.

Potential Benefits and Residual/Unavoidable Impacts**:** Minimizing noise, air traffic, and helicopter use will reduce disturbance, potential loss of nests, disruption of broods, and energetic costs to molting waterfowl.

2.8 Terrestrial Mammals

2.8.1 Measure 17: Caribou Crossings

Objective**:** Minimize effects to caribou movement due to Project infrastructure.

Requirement/Standard**:** BMP or ROP E-7, as applicable, describes requirements related to caribou ramps over pipelines or buried pipelines. *Measure 17: Caribou Crossings* designates locations for these, specifically: southwest of the airstrip in Alternative B (Proponent's Project), where caribou movements could be funneled or where roads and pipelines would be close together. Other areas include the intersections of the pipeline and the road to Bear Tooth drill site 2 (BT2), the access road just west of the intersection of the infield and access roads, the road to Bear Tooth drill site 3 (BT3), and the infield road near the constructed freshwater reservoir.

Potential Benefits and Residual/Unavoidable Impacts**:** Caribou are generally able to cross pipelines elevated to 7 feet, but ramps could be effective in areas where caribou movements are funneled towards pipelines close to roads with high traffic levels (Lawhead, Parrett et al. 2006). Caribou may still have difficulty crossing roads with high traffic volumes.

2.8.2 Measure 18: Vehicle Use Plans

Objective**:** Minimize effects to caribou movement due to Project vehicle traffic.

Requirement/Standard**:** Submit a vehicle use plan to minimize traffic impacts consistent with ROP M-1 (plan would be required as per ROP M-1 if the ROP is adopted in the ROD for the 2020 NPR-A IAP/EIS), include the following or similarly protective measures (consistent with safe movement of equipment and personnel) to mitigate effects to caribou movement:

- Require vehicles to stop traffic when 25 or more caribou appear to be approaching the road.
- Require vehicles to caravan or require periodic traffic closures when groups of caribou are near a road and the road has traffic rates of more than 15 vehicles per hour. Caravanning has limited ability to lower calving displacement (Lawhead, Prichard et al. 2004), but it may increase crossing success on roads with high traffic levels (more than 15 vehicles per hour) by providing periods without traffic to allow caribou to cross. It may be easier logistically to close the road for a specified number of hours a day (as determined by BLM) rather than caravanning. Spring, fall, and winter will likely be the periods of greatest concern for caribou crossing Project roads.

Potential Benefits and Residual/Unavoidable Impacts**:** Caribou can have difficulty crossing roads with high traffic volume, therefore limiting traffic frequency by caravanning or requiring periods with no traffic may allow caribou groups to cross roads. Caribou may still calve at lower densities near roads,

even with low traffic volume (Lawhead, Prichard et al. 2004) and caribou may still have difficulty crossing roads.

2.8.3 Measure 19: Aircraft Use Plan

Objective**:** Minimize effects to caribou movement due to Project air traffic.

Requirement/Standard**:** BMP F-1 or ROP F-2, as applicable, requires the use of an Aircraft Use Plan. *Measure 19: Aircraft Use Plan* clarifies items that will be included in the plan for the Project. The plan will include the following:

1. Minimize Q400 traffic between Alpine and Willow during calving (May 20 to June 20) to reduce impacts to caribou. Q400 traffic between Willow and Kuparuk or Deadhorse is necessary and would be allowed.
2. Plans to minimize the disturbance to calving caribou (description of areas avoided, how flight numbers were minimized, and that low altitude flights were avoided or limited).

Potential Benefits and Residual/Unavoidable Impacts**:** Limiting high-decibel aircraft activity will help lower the amount of disturbance and displacement of caribou that occurs near the airstrip, especially during calving. Because some flights between Willow and Kuparuk or Deadhorse will still occur in addition to general activity at the airstrip area, some displacement of calving caribou is still likely.

2.8.4 Measure 20: Deicing Materials

Objective**:** Minimize effects to wildlife from Project deicing materials.

Requirement/Standard**:** Use propylene glycol for deicing, except in extreme weather events**.**

Potential Benefits and Residual/Unavoidable Impacts**:** This will reduce use of toxic materials and thereby reduce potential exposure of wildlife and subsistence users.

2.9 Land Ownership and Use

2.9.1 Measure 21: Community Winter Access Trail Coordination

Objective: Minimize effects from the Project to users of the community winter access trail (CWAT).

Requirement/Standard: Develop a coordination plan with other stakeholders who are permitted to use the CWAT snow road (i.e., NSB residents) by BLM to prevent access conflicts during sealift module movement across the Colville River.

Potential Benefits and Residual/Unavoidable Impacts: The CWAT was issued as a 5-year right-of-way (ROW) to the NSB with the right to renew. Other private users and companies hauling freight across this route will be required to coordinate their use with both the NSB and CPAI (once CPAI has a ROW permit). There are usually two to three commercial freight hauling efforts each winter. Coordination with other ROW holders and local residents who may use the route will facilitate improved communication and use requirements in the permits of future ROW applicants.

2.10 Subsistence and Sociocultural Systems

2.10.1 Measure 22: Subsistence Access

Objective**:** Minimize effects to subsistence access from the Project.

Requirement/Standard**:** Only if 2013 IAP BMPs are applied, continue to consult with local subsistence users and community organizations regarding the appropriate design and location of subsistence boat ramps, pullouts, and subsistence tundra access ramps. Consult with other operators regarding other boat ramp projects on the North Slope that may inform future designs.

Potential Benefits and Residual/Unavoidable Impacts**:** Residents will be more likely to use Project roads if they are easier to access and tundra access ramps are in locations that ease use. Allowing potential users of the access ramps a role in ramp location and design will increase likelihood that the ramps will provide

a locally accepted mechanism for leaving the road surface and accessing tundra that is safe, feasible, and can minimize impacts to subsistence access and aid in search and rescue missions. Regular meetings with local residents who use the roads will facilitate improved design features or other suggestions that can be incorporated to make use of the road, pullouts, and ramps safer and more effective for users and prevent tundra damage.

2.11 Environmental Justice

2.11.1 Measure 23: Government to Government Meetings

Objective**:** Minimize effects from the Project to the community of Nuiqsut.

Requirement/Standard**:** Attend government to government meetings between the Native Village of Nuiqsut and BLM, as requested by Native Village of Nuiqsut, to discuss issues and resolution strategies throughout the life of the Project.

Potential Benefits and Residual/Unavoidable Impacts**:** Regular meetings with the community and BLM will facilitate improved communication and early identification of potential issues that may affect the community. It will allow discussion of strategies to resolve concerns and provide the community with a platform for dialog throughout the life of the Project.

3.0 ADDITIONAL MITIGATION MEASURES NOT ADOPTED

The decision in this ROD includes all practicable means to avoid or minimize environmental harm consistent with the purpose and need of the action, including potential impacts associated with cumulative impacts. Pursuant to 40 CFR 1505.2(c), BLM provides the following explanations for not adopting the following mitigation measures considered in the Willow MDP FEIS (Table A.1). Section 2.0 (Additional Mitigation Measures Adopted) of this appendix describes additional mitigation measures considered in the FEIS that are adopted by this ROD. All proposed mitigation measures considered in the FEIS are described in Appendix I of the FEIS.

Table A.1. Rationale for Mitigation Not Adopted

Resource	Additional Suggested Avoidance, Minimization, or Mitigation
Soils, Permafrost, and Gravel Resources	**Measure:** Monitor thermokarsting, depth of active layer, and compression of soil and vegetation in annual resupply ice road footprint, for footprints that are used consecutively each year. **Rationale:** The adopted alternative and module delivery option do not have an annual ice road. **Measure:** Use thick embankments and shallow slopes. **Rationale:** The mitigation measure contradicts requirements from the Clean Water Act to minimize the gravel footprint. **Measure:** Separate native soils from Project fill materials using geotextiles or fabrics. **Rationale:** The use of geotextiles would not improve the structural integrity of the permafrost or protect permafrost beyond the proposed design. Additionally, during reclamation, fabric could mix with gravel and native soil and create large volumes of waste soil that would need to be hauled outside of the NPR-A to a waste disposal site.
Visual Resources	**Measure:** Ensure structures are a color that blends in with the background colors of the natural landscape. All colors will be pre-approved by BLM. **Rationale:** BMP or ROP E-17 already requires a plan for approval by the BLM Authorized Officer, at the time of application for construction of permanent facilities, to best minimize visual impacts, consistent with the VRM class for the lands on which facilities would be located.

Resource	Additional Suggested Avoidance, Minimization, or Mitigation
Water Resources	**Measure:** Should any spills occur on the MTI, the affected gravel would be addressed immediately and removed prior to MTI abandonment. **Rationale:** The adopted module delivery option, Option 3, will not have an MTI. **Measure:** If Option 1 or 2 is selected, place and maintain appropriate navigation aids on the MTI after it is decommissioned (the top of the MTI is expected to drop to or below the water surface). **Rationale:** Option 1 or 2 was not selected; Option 3 will not have an MTI. **Measure:** Before construction and continuing through operations, test and monitor freshwater sources that intersect the Project for hydrocarbons. **Rationale:** Water quality protection and monitoring is the purview of the ADEC. Testing and monitoring of all freshwater sources that intersect the Project is not reasonable and does not mitigate known Project effects. **Measure:** Monitoring plan for surface water quality testing up- and downstream of the HDD site. Surface water will be tested before, during, and after construction. The monitoring plan will include the locations of testing, timing of testing, number of samples, and chain of custody for processing samples. **Rationale:** Drilling muds are generally inert and nontoxic. If lost subsurface, it is merely a technical problem remedied by changing viscosity or adding lost circulation materials, among other methods. Additionally, Water quality protection and monitoring is the purview of the ADEC. **Measure:** Monitoring plan for groundwater quality testing up- and down-gradient of the HDD site. Groundwater will be tested before, during, and after construction. The monitoring plan will include the locations of testing, timing of testing, number of samples, and chain of custody for processing samples. **Rationale:** Drilling muds are generally inert and nontoxic. If lost subsurface, it is merely a technical problem remedied by changing viscosity or adding lost circulation materials, among other methods. Additionally, water quality protection and monitoring is the purview of the ADEC. **Measure:** Develop a management plan for the CFWR. The plan will describe how flow in Willow Creek 3 will be monitored and at what "low flow" the flood control gate into the CFWR would be closed. Results of monitoring will be reported annually as will the dates of flood control gate closure. **Rationale:** Willow Creek 3 contains anadromous fish and therefore stream flow and monitoring is the purview of ADF&G.
Wetlands and Vegetation	**Measure:** If Alternative C or D is selected, monitor vegetation damage, and compression of soil and vegetation in annual resupply ice road footprint (footprints that are used consecutively each year). Because wetter landscapes show less impact from multiyear ice roads (Yokel, Huebner et al. 2007) and ADNR monitors only tussock tundra and soil compaction, this suggested measure would focus on non-tussock wetlands (including patterned ground) with a Cowardin water regime class of Temporarily Flooded, Saturated, or Seasonally Flooded Ground by vegetation type (total live cover of graminoid, shrub, forb, moss) and percentage of bare soil would be monitored with control points and points within ice road footprints to determine changes. **Rationale:** Alternative C or D was not selected; Alternative B does not have an annual ice road. **Measure**: Confine loading and unloading of soils for gravel stockpiles to the downwind side of the pile; if stockpiles will be on-site for longer periods of time, seed with appropriate vegetation to reduce wind erosion. Wind barriers (such as snow fences) may also be appropriate in some situations. **Rationale:** This mitigation would introduce new safety risks. Loading from the downwind side would impair the vision of the operator, expose the operator to breathing particulates, and would result in increased equipment maintenance (air intake). Revegetation can take several years to establish and would not provide protection from wind erosion in the short time period desired.
Fish	**Measure:** Identify overwintering fish habitat (maximum water depths, particularly free-water depth under ice cover) in the Itkillik River and other tributaries of the Colville River that might intersect the Option 3 ice road. Avoid crossings of potential overwintering habitat. **Rationale**: This measure was adopted, but limited to NPR-A, the only BLM-managed lands in the Project area. **Measure:** Adopt BMPs suggested by NMFS for essential fish habitat for invasive species (Limpinsel, Eagleton et al. 2017): 1. Encourage vessels to exchange ballast water in marine waters (in accordance with the U.S. Coast Guard's voluntary regulations) to minimize the possibility of introducing invasive estuarine species into similar habitats. Ballast water taken on in the open ocean would contain fewer organisms, and these would be less likely to become invasive in estuarine conditions. 2. Discourage vessels that have not exchanged ballast water from discharging their ballast water into estuarine receiving waters. **Rationale:** These marine activities are outside BLM's jurisdiction.

Resource	Additional Suggested Avoidance, Minimization, or Mitigation
Birds	**Measure:** Complete upgrades to the Kuparuk gravel road system involving wetland fill before or after the nesting season (June 1 to July 31) if possible. **Rationale:** The Kuparuk gravel road system is outside of NPR-A and not managed by BLM. **Measure:** Limit water withdrawal to lakes without sensitive fish or breeding yellow-billed loons. **Rationale:** The State of Alaska regulates water withdrawal with restrictions on volumes of water removed. Proponent water withdrawals from yellow-billed loon lakes will be done in accordance with permitted ADNR- and ADF&G-authorized limitations. **Measure:** Consider revising traffic pattern, altitude, or location to minimize conflicts with molting geese. **Rationale:** There are no goose molting areas in NPR-A that would overlap with Alternative B and Option 3. **Measure:** Avoid preferred habitats, where possible. **Rationale:** Project facilities have been located to the extent possible to avoid preferred habitats of listed spectacled and Steller's eiders. Ice roads could be routed to avoid preferred habitats, but that would place them in moist and shrub habitats where ice roads cause more damage to vegetation. Because of the dispersion of preferred habitats with non-preferred habitats, it is not feasible to avoid overflying preferred habitats. Flight altitude restrictions (1,500 feet agl) would reduce disturbance to nesting birds. **Measure:** Minimize air traffic during the nesting period (June 1 to August 1) when the movements of incubating birds are restricted, and the molting period (July 15 to August 20), when birds may be energetically stressed and sensitive to disturbance. **Rationale:** Both the 2013 IAP BMPs (F-1, K-6) and the 2020 IAP ROPs (F-2, F-3, F-4, K-6) sufficiently protect birds from air traffic. **Measure:** Minimize light visible from outside of Project facilities by shading externally facing windows on buildings. **Rationale:** In adopted *Measure 15: Bird Collisions* the words "external shading" is replaced with "window treatments" to ensure that this measure is not interpreted as a requirement for external structures, such as awnings or blinds.
Terrestrial Mammals	**Measure:** Install game cameras to study the effectiveness of measures used to reduce vehicle traffic impacts, such as stopping traffic or caravanning. **Rationale:** This method of monitoring is expensive and labor-intensive as cameras would capture thousands of pictures of tundra for every picture of caribou and data typically yield results that are difficult to tie to definitive conclusions. **Measure:** Use propylene glycol for vehicle cooling systems, which is not toxic to wildlife. **Rationale:** Propylene glycol would be used for deicing but cannot be used on some vehicle cooling systems per manufacturer specifications. Potentially toxic chemicals used by equipment fleet are managed according to EPA and ADEC requirements.

Resource	Additional Suggested Avoidance, Minimization, or Mitigation
Subsistence and Sociocultural Systems	**Measure:** Inform employees who are North Slope residents of company subsistence leave policies and ensure that leave policies are flexible to account for annual variation in the timing and length of subsistence activities. **Rationale:** Lessee leave policies are outside of BLM's jurisdiction. **Measure:** Identify areas with high drifted snow accumulation along pipelines after construction and implement a snow management program to clear drifts and create access points (i.e., openings) in areas where drifts accumulate for a long distance (e.g., 0.25- and 0.5-mile lengths) along pipelines. Consult with Nuiqsut residents on an appropriate distance for cleared access areas as well as the depth of snowdrifts that impede travel under pipelines. **Rationale:** Pipelines 7 feet and higher, as proposed for Willow, rarely (if at all) create drifts large enough to prevent movement. **Measure:** Install traffic control signs (e.g., stop signs) to halt industry vehicle traffic at all subsistence access ramps to ensure that subsistence users can cross safely. **Rationale:** There would be far more industry traffic than subsistence traffic, thus subsistence traffic should yield**.** **Measure:** Employ subsistence representatives who receive daily communications on Project activities and report potential conflicts with subsistence users. Subsistence representatives will be provided with clear communication protocols and training, be local and knowledgeable residents, and be included in field activities the community believes have a high potential of conflicting with subsistence uses (e.g., helicopter-based surveys). **Rationale:** BMP H-1 or ROP H-1 sufficiently meet the objective to prevent unreasonable conflicts between subsistence users and other activities. **Measure:** In coordination with local organizations, such as the KSOP (required in Proponent design measure 68 and ROP H-4), ensure communications include the timing and location of development activities such as air traffic, blasting, and other construction activities. **Rationale:** BMP H-1 or ROP H-1 sufficiently meet the objective to prevent unreasonable conflicts between subsistence users and other activities. **Measure:** Work with local community organizations to establish measures to reduce impacts of vehicle traffic on subsistence activities, particularly during construction. **Rationale:** *Measure 18: Vehicle Use Plans* and BMP H-1 or ROP H-1 sufficiently meet the objective to reduce impacts of vehicle traffic on subsistence activities. **Measure:** As part of the Subsistence Plan (required in ROP H-1) and as part of the Proponent's notification and consultation with Alaska Native groups (required in ROP H-4), provide equal opportunities for various local entities (e.g., KSOP, Native Village of Nuiqsut, City of Nuiqsut, Kuukpik Corporation), in addition to knowledgeable subsistence users, to provide input. **Rationale:** BMP H-1 or ROP H-1 sufficiently meet the objective to prevent unreasonable conflicts between subsistence users and other activities. **Measure:** Participate in Conflict Avoidance Agreements with the Alaska Eskimo Whaling Commission to reduce potential impacts on bowhead whale hunting resulting from barge and vessel traffic. **Rationale:** BMP H-1 or ROP H-1 sufficiently meet the objective to prevent unreasonable conflicts between subsistence users and other activities. BLM does not have the authority to require an applicant to hire locals. **Measure:** Implement a 1-mile development-free buffer around Native allotments to ensure the viability of the allotments for subsistence use. Exceptions will be made for allotment owners who agree to having Project activities closer than 1 mile. Permanent infrastructure or regular activities will not be allowed within 1 mile of Native allotments. **Rationale:** Setbacks were considered and addressed at the plan level in the 2013 IAP and are currently being considered in for the 2020 IAP. Furthermore, a development-free buffer would be inconsistent with current, existing lease rights and could not be incorporated as a mitigation measure for the Project.
Environmental Justice	**Measure:** Continue to use the KSOP to maintain meaningful engagement in the Project and identify continuing concerns and specific Project impacts. **Rationale:** BMP H-1 or ROP H-1 sufficiently meet the goal of maintaining meaningful engagement in the Project by the community and to identify continuing Project concerns.

Resource	Additional Suggested Avoidance, Minimization, or Mitigation
Public Health	**Measure:** Limited health data are available for Nuiqsut. The best data available date from the NSB's 2010 survey. Funding a collection of health information for Nuiqsut and studies of contaminant levels in local subsistence resources would provide better data for evaluation of potential health effects associated with oil field development and operation. **Rationale:** Public health monitoring is the purview of the State of Alaska and NSB, and would require handling of sensitive information protected under HIPPA. **Measure:** Create a public health monitoring program at a regional level to track health indicators that are vulnerable to impacts from oil and gas activities. These indicators should focus on health outcomes and/or determinants of local concern that can be tied to oil and gas activity. Where possible, indicators should include threshold levels and specific actions should be developed for when thresholds are surpassed. The State of Alaska should be responsible for the development and implementation of the monitoring program; however, the NSB and the Alaska Native Tribal Health Consortium should be consulted in the identification of appropriate indicators, thresholds, and responsive actions. **Rationale:** Public health monitoring is the purview of the State of Alaska and NSB, and would require handling of sensitive information protected under HIPPA. **Measure:** Establish a Nuiqsut public health coordination group to conduct health education. The group could also be used to write grants for NPR-A Impact Mitigation Program funds to conduct baseline health monitoring, if the community desired. Development and implementation of the monitoring program will be in consultation with (or assisted by) the State of Alaska, NSB, and the Alaska Native Tribal Health Consortium, once a grant is in place. **Rationale:** Establishing a public health coordination group would be the proper role of the State of Alaska; it is beyond the expertise of BLM, which is not a public health agency.

Note: ADEC (Alaska Department of Environmental Conservation); ADF&G (Alaska Department of Fish and Game); ADNR (Alaska Department of Natural Resources); agl (above ground level); BLM (Bureau of Land Management); BMP (best management practice); EPA (U.S. Environmental Protection Agency; HDD (horizonal directional drilling); HIPPA (Health Insurance Portability and Accountability Act); IAP (Integrated Activity Plan); KSOP (Kuukpik Subsistence Oversight Panel); MTI (module transfer island); NMFS (National Marine Fisheries Service); NPR-A (National Petroleum Reserve in Alaska); NSB (North Slope Borough); Proponent (ConocoPhillips Alaska, Inc.) ROP (Required Operating Procedure); VRM (Visual Resource Management).

4.0 OTHER REQUIRED MITIGATION

The current Beaufort Sea Incidental Take Regulations (ITRs) (81 FR 52318; 18.128) for polar bears describe mitigation, monitoring, and reporting requirements for oil and gas operators in the central Beaufort Sea and have been important in mitigating impacts to polar bears from oil and gas activities. BLM would apply these mitigation measures to the Project and support additional mitigation measures included in future ITRs in the analysis area.

Additional measures, described below, resulted from BLM's Section 7 consultations with USFWS and NMFS for the Project and are hereby adopted. All of the measures described in the *NMFS Letter of Concurrence* (dated July 15, 2020), pages 5 to 9, are applicable to the Project. The NMFS Letter of Concurrence is included in Appendix B of this ROD (National Marine Fisheries Service Letter of Concurrence).

The following reasonable and prudent measure contained in the USFWS's Biological Opinion for the Project is applicable to the Project:

Reasonable and Prudent Measure 1: Contribute to improved understanding of spectacled eider collision risk with Project infrastructure, facilities, and/or vessels.

Observations of collision events in which one or more listed eider, or three or more birds of any species, appear to have collided with oil and gas infrastructure (i.e., wires, towers, or buildings), or vessels shall be recorded and reported to the USFWS, Fairbanks Fish and Wildlife Conservation Office in an annual report due by December 31, unless listed eider collisions exceed the number exempted by the incidental take statement. Reports will include the date, time of day, weather conditions, number and species of birds involved, and other factors considered to be relevant by the observer, and will include photographs of dead birds, top and bottom view, with wings spread, and with the bill and feet visible if possible.

5.0 REFERENCES

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Record of Decision

Willow Master Development Plan

Appendix B

National Marine Fisheries Service

Letter of Concurrence

October 2020

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

July 15, 2020

Chad Padgett
Bureau of Land Management, Alaska State Office
222 West Seventh Ave, #13
Anchorage, AK 99513-7504

Re: Willow Master Development Plan (6840(930)) Letter of Concurrence, NMFS #AKRO-2020-01222

Dear Mr. Padgett:

The National Marine Fisheries Service (NMFS) has completed informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed barge transport and delivery of construction materials to Oliktok Dock, screeding, dock improvement, and pipeline construction included in the development on federal oil and gas leases in the northeastern area of the National Petroleum Reserve in Alaska (NPR-A) (Figure 1). The Bureau of Land Management (BLM) requested written concurrence that the proposed action may affect, but is not likely to adversely affect, the bowhead whale (*Balaena mysticetus*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), North Pacific right whale (*Eubalaena japonica*), Western North Pacific stock gray whale (*Eschrichtius robustus*), Western North Pacific distinct population segment (DPS) or Mexico DPS humpback whale (*Megaptera novaeangliae*), sperm whale (*Physeter macrocephalus*), Arctic subspecies ringed seal (*Phoca hispida hispida*), Beringia DPS bearded seal (*Erignathus barbatus*), or the Western DPS Steller sea lion (*Eumetopias jubatus*), or North Pacific right whale or Steller sea lion critical habitat. Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines. A complete administrative record of this consultation is on file in this office.

Consultation History

NMFS received your request for consultation on May 8, 2020. NMFS requested additional information about the project via email on May 21, 2020. On May 29, 2020, BLM provided NMFS with responses to our request regarding the proposed mitigation measures, and scheduled a meeting to discuss the information. NMFS met remotely with staff from BLM, USACE, Fairweather, and Dowl on June 1, 2020 to review the new information. After all parties agreed upon several additional measures, and the changes were reflected in documents sent to NMFS via email, NMFS initiated consultation on June 4, 2020.

Description of the Proposed Action

BLM is proposing to develop federal oil and gas leases in NPR-A. A majority of the proposed work will take place inland on leased federal lands (e.g., infrastructure development including roads, pipeline tie-ins, and a gravel mine site) and will not directly affect ESA-listed marine

mammals. The proposed project activities that have the potential to affect ESA-listed marine mammals and critical habitat are described below.

Barge Delivery to Oliktok Dock

Sealift barges will be used for delivery of construction materials from Dutch Harbor to Oliktok Dock for four open-water seasons (after July 1 until prior to the formation of land-fast ice in 2022-2024 and 2026). Barges and associated tug boats will travel along regularly used routes through the Bering, Chukchi, and Beaufort seas (Figure 1). Barges will arrive at a lightering station 4.3 km (2.6 mi) from Oliktok Dock and materials will then be transported by support vessels from the lightering station to the dock (Figure 2). The expected amount of barge and support vessel traffic is outlined in Table 1.

Table 1: Barge and Support Vessel Traffic

Marine Transport Type	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**Total**
Sealift Barges[a] Dutch Harbor to Oliktok Dock	0	0	8	0	1	0	9
Other Barges[b] Dutch Harbor to Oliktok Dock	6	8	5	0	5	0	24
Tugs[c] Dutch Harbor to Oliktok Dock	9	12	20	0	12	0	53
Support Vessels [c] Lightering Area to Oliktok Dock	66	88	106	0	58	0	318
Total Vessels	81	108	139	0	76	0	404

[a]Includes large-module sealife barges only
[b]Includes barges for small modules and bulk materials (i.e., material small enough that is can be transported to the Willow area via the Apline annual resupply ice road)
[c]Includes crew boats, tugs supporting sealift barges, screeding barge, and other support vessels

Screeding

To accommodate construction material delivery, barges will be grounded during lightering. This activity requires annual screeding around both the lightering station and Oliktok Dock. The screeding process, which uses a barge manipulated by two tug boats, will redistribute the seabed materials to provide a flat and even surface on which the barges can be grounded. An excavator may be used as needed to groom significant depressions or humps in the seabed, but the bucket will not break the water surface. A total of ~0.05 km^2 (12.1 acres) of screeding will be completed each of the four summers (2022-2024, 2026), shortly before barges begin to arrive: ~0.04 km^2 (9.6 acres) at the lightering station and ~0.01 km^2 (2.5 acres) at Oliktok Dock.

Improvements to Oliktok Dock

Improvements will be made to Oliktok Dock to help accommodate the large barges that will be used for delivering project materials. The dock will be raised six feet and a gravel ramp added. The modifications will not expand the current footprint of the dock and all construction will be on land, minimizing any effects of underwater noise on ESA-listed marine mammals.

Pipeline Crossing of the Colville River

Seawater and diesel pipelines will be installed in the winter of 2024, roughly 19 km (12 mi) upstream from the mouth of the Colville River and 121 m downstream from an existing horizontal directional drilling (HDD) crossing for the Alpine Sales Pipeline (Figure 1). A third, smaller pipeline will contain anodes for cathodic protection to reduce potential corrosion of the other two pipelines.

The pipelines will be constructed using HDD and will be 9.1 m apart. Boreholes for each pipeline will extend ~1369 m between two new gravel pads that will be built 91 m from the riverbank on each side of the river. The boreholes will reach a depth of ~21 m below the river channel bottom at the center of the crossing. When installed, pipelines will be insulated in an outer casing that will prevent heat from being transferred to surrounding permafrost and will help to contain any spills or leaks that may occur.

Spill Prevention and Response

Spill prevention and response measures will be in place in the event that a project-related spill occurs. These measures will be outlined in a Project Oil Discharge Prevention and Contingency Plan (ODPCP) and a Spill Prevention Control and Countermeasures (SPCC) Plan. Specifically for the Colville River pipeline crossing, pre-staged response equipment will be located across the action area to be rapidly deployed if needed. Necessary equipment will be stored in close proximity to the pipeline site for easy accessibility if a spill were to occur. Project employees will receive training on preventing spills and participate in spill response drills in coordination with federal, state, and local agencies. The pipeline will be inspected regularly through visual and forward-looking infrared equipment to ensure equipment integrity.

Action Area

The action area is defined in the ESA regulations (50 CFR § 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur.

NMFS defines the action area for this project as the area within which project-related noise levels are ≥120 dB_{rms} re 1µPa or approaching ambient noise levels (i.e., the point where no measurable effect from the project would occur).[1] Received sound levels associated with barge and support vessel traffic are anticipated to decline to 120 dB_{rms} re 1µPa within 2154 m (1.3 mi) of the source. This includes the area within 4.8 km (3 mi) along the marine vessel route (Figure 1) and 2.4 km (1.5 mi) along the lightering route for support vessels and barges to and from Oliktok Dock (Figure 2). Received sound levels associated with screeding are anticipated to

[1] We express noise as the sound force per unit micropascals (µPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 µPa, and the units for underwater sound pressure levels are decibels (dB) expressed in root mean square (rms), which is the square root of the arithmetic average of the squared instantaneous pressure values.

decline to 120 dB_{rms} re 1µPa within 215 m (705 ft) of the source. The installation site for seawater and diesel pipelines under the Colville River is also included in the action area (Figure 2).

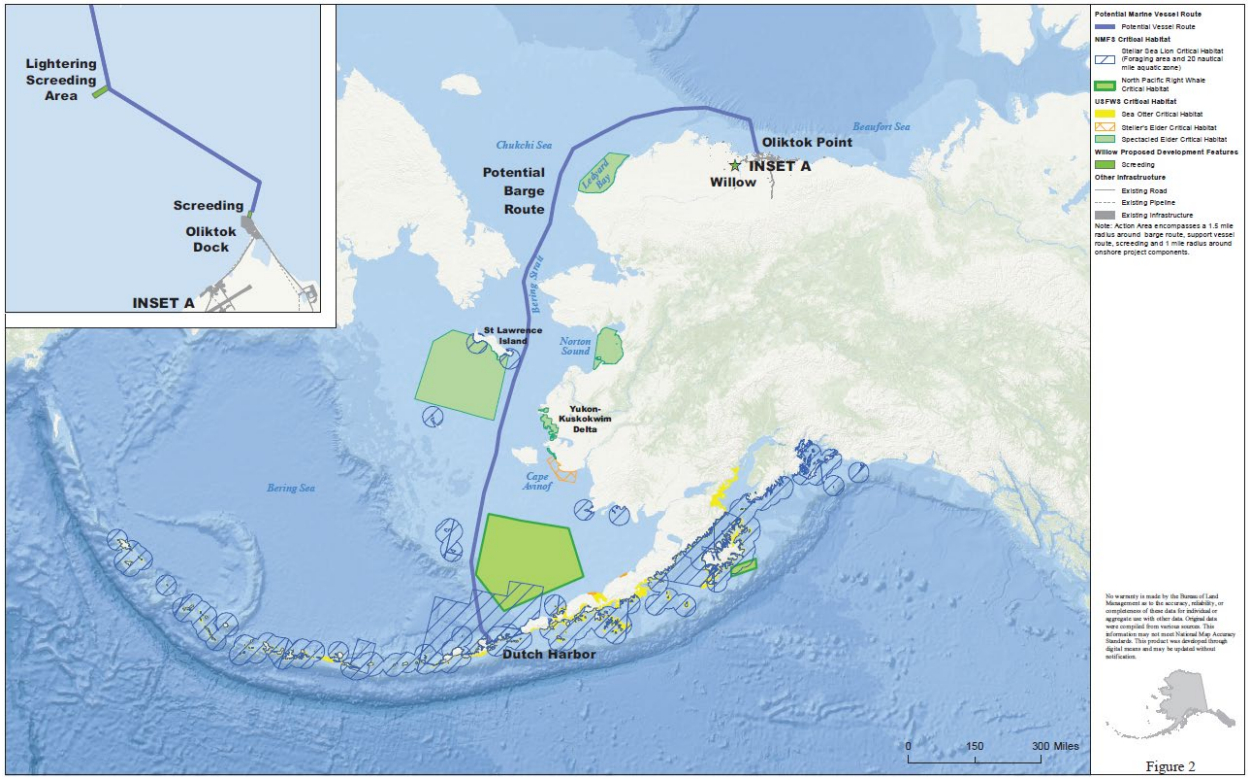

Figure 1. Marine transit route from Dutch Harbor to Oliktok Dock. This portion of the action area includes the area within 4.8 km along the entire route.

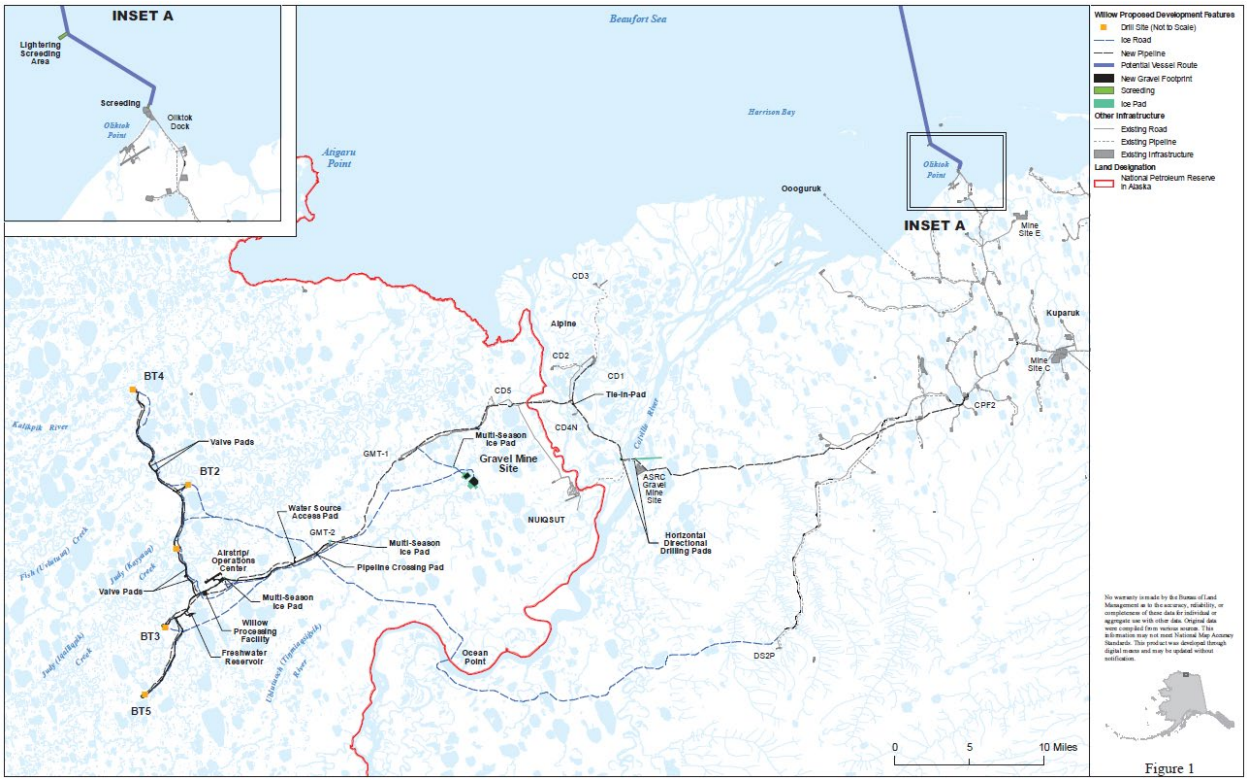

Figure 2. Project action area on the North Slope. The yellow box indicates the horizontal directional drilling (HDD) site along the Colville River.

Mitigation Measures

To help mitigate impacts of the project activities on species and habitats protected by the ESA, ConocoPhilips Alaska, Inc (CPAI) will abide by applicable existing NPR-A lease stipulations (LSs) and best management practices (BMPs) described in the NPR-A Integrated Activity Plan (BLM 2013). CPAI also has included into their design features to avoid and minimize project impacts, which can be found in the Draft EIS (Table I.1.2) (BLM 2019).

In addition, the project will incorporate the following mitigation measures:

General Measures

1. The applicant will notify NMFS 7 days prior to the start of in-water activity.
    - If there is a delay in activity, the applicant will notify NMFS as soon as possible.

Measures for Transiting Vessels

2. Crew members on barges and support vessels will be trained on basic marine mammal identification and vessel disturbance guidelines.
3. When weather conditions require, such as when visibility drops, vessel operators must reduce speed and change direction, as necessary (and as operationally practicable), to avoid the likelihood of injuring marine mammals.
4. The transit of vessels is not authorized before July 1. This operating condition is intended to allow marine mammals the opportunity to disperse from the confines of spring leads in

sea ice and minimize interactions with subsistence hunters. The return transit is dependent on completion of project work and presence of nearshore ice that precludes safe operations. The typical timeframe for returning vessels is mid-to late October or early November, depending on ice conditions. Transit will be prior to formation of shore or landfast ice.

5. The marine vessel route will avoid North Pacific right whale (NPRW) designated critical habitat. Should crew members identify NPRW outside of critical habitat, a sighting report will be reported to NMFS within 24 hours with the following information:
    - Date, time, and geographic coordinates of the sighting(s);
    - Species observed, number of animals observed per sighting event; and number of adults/juveniles/calves per sighting event (if determinable); and
    - Because sightings of NPRWs are uncommon, and photographs that allow for identification of individual whales from markings are extremely valuable, photographs will be taken if feasible, but in a way that does not involve disturbing the animal (e.g., if vessel speed and course changes are not otherwise warranted, they will not take place for the purpose of positioning a photographer to take better photographs). Photographs taken of NPRWs will be submitted to NMFS.
6. Vessels may not be operated in such a way as to separate members of a group of marine mammals from other members of the group.
7. Operators should take reasonable steps to alert other vessel operators in the vicinity of marine mammals.
8. Vessels will not allow tow lines to remain in the water, and no trash or other debris will be thrown overboard, thereby reducing the potential for marine mammal entanglement. All personnel will be responsible for cutting all unused packing straps, plastic rings, and other synthetic loops that have the potential to become entangled around fish or wildlife.
9. Vessels will implement measures to minimize risk of spilling hazardous substances. These measures will include avoiding operation of watercraft in the presence of sea ice to the extent practicable and using fully operational vessel navigation systems composed of radar, chart plotter, sonar, marine communication systems, and satellite navigation receivers, as well as the Automatic Identification System (AIS) for vessel tracking.
10. Vessel operators will avoid groups of 3 or more whales. A group is defined as being 3 or more whales observed within a 500 m (1,645 ft) area and displaying behaviors of directed or coordinated activity (e.g., group feeding).
11. All nonessential boat and barge traffic will be scheduled to avoid periods when bowhead whales are migrating through the area to where they may be affected by sound from the project. Any non-essential boat, barge, or aircraft will be scheduled to avoid approaching the harvest area around Cross Island during the bowhead whale subsistence hunting season consistent with the Conflict Avoidance Agreement.
12. If a vessel approaches within 1.6 km (1 mi) of observed whales, except when providing emergency assistance to whalers or in other emergency situations, the operator will take reasonable precautions to avoid potential interaction with the whales by taking one or more of the following actions, as appropriate:

- Reducing vessel speed to less than 5 knots (5.8 miles per hour [mph]) within 274 m (900 ft) of the whale.
- Steering around the whale, if possible.
- Operating the vessel to avoid causing a whale to make multiple changes in direction.
- Checking the waters around the vessel to ensure that no whales will be injured when the propellers are engaged.
- Vessels will not exceed speeds of 10 knots (11.5 mph) in order to reduce potential whale strikes.
- If a whale approaches 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. If the vessel is taken out of gear, vessel crew will ensure that no whales are within 50 m (164 ft) of the vessel when propellers are re-engaged, thus minimizing risk of marine mammal injury.
- Vessels will stay at least 300 m (984 ft) away from cow-calf pairs, feeding aggregations, or whales that are engaged in breeding behavior.

13. Consistent with NMFS marine mammal viewing guidelines (https://alaskafisheries.noaa.gov/pr/mm-viewing-guide), vessel operators will, at all times, avoid approaching within 91 m (300 ft) of marine mammals. Operators will observe direction of travel and attempt to maintain a distance of 91 m (300 ft) or greater between the animal and the vessel by working to alter course or slowing the vessel.
14. If a listed marine mammal is struck by a vessel, it must be reported to NMFS within 24 hours. The following will be included when reporting vessel collisions with marine mammals:
    - Information that will otherwise be listed in the PSO Observation Record.
    - Number and species of marine mammals involved in the collision.
    - The date, time, and location of the collision.
    - The cause of the take (e.g., vessel strike).
    - The time the animal(s) was first observed and last seen.
    - Mitigation measures implemented prior to and after the animal was taken.
    - Contact information for PSO on duty at the time of the collision, vessel's pilot at the time of the collision, or ship's captain.
15. Vessel transit through Steller sea lion critical habitat or near major rookeries and haulouts:
    - The vessel operator will not purposely approach within 3 nmi (5.5 km) of major Steller sea lion rookeries or haulouts where vessel safety requirements allow and/or where practicable. Vessels will remain 3 nmi (5.5 km) from all Steller sea lion rookery sites listed at 50 CFR 224.103(d)(1)(iii).

Measures for screeding at Oliktok Dock

16. During screeding, a trained PSO will be stationed on the tug or barge.
17. Screeding will stop if a marine mammal is observed within a 215 m (707 ft) radius of the screeding equipment. Screeding will recommence when the marine mammal has moved outside of that radius or has not been observed for 15 minutes (for seals) or 30 minutes (for cetaceans).
18. PSOs will record observations on data forms or electronic data sheets to be submitted to NMFS in a digital spreadsheet in monthly, annual, and final reports. PSOs will record the following:
    - Date and time that in-water activity and observation efforts begin and end;
    - 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);
    - Species, numbers, and, if possible, sex and age class (or color) of observed marine mammals, along with the date, time, and location of the observation;
    - The predominant sound-producing activities occurring during each marine mammal sighting;
    - Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the shutdown zone while screeding was active. Behavioral reactions of marine mammals observed just prior to, and during, screeding;
    - Location of marine mammals (geographic coordinates), distance from observer to the marine mammal, and distance from the predominant sound-producing activity or activities to marine mammals;
    - Whether the presence of marine mammals necessitated the implementation of mitigation measures to avoid acoustic impact, and the duration of time that operations were affected by the presence of marine mammals.

Reporting

19. Operators should report any dead or injured listed marine mammals to NMFS.
20. Monthly reports will be submitted to NMFS for all months with project activities by the 15th of each month following the monthly reporting period. The monthly report will contain and summarize the following information:
    - Dates, times, locations, heading, speed, weather, sea conditions (including Beaufort state and wind force), and a list of all in-water sound-producing activities occurring concurrent with marine mammal observations.
    - Species, number, location, distance from the vessel, and behavior of all observed marine mammals, as well as associated project activity (e.g., number of power-downs and shutdowns), observed throughout all monitoring activities.
    - Observation data will be provided in digital spreadsheet format that can be queried.

- An estimate of the number of animals (by species) exposed to sound at received levels greater than or equal to Level B harassment thresholds, with a discussion of any specific behaviors those individuals exhibited.
- The report will confirm the implementation of each mitigation measure, and describe their effectiveness for minimizing the adverse effects of the action on ESA-listed marine mammals.

21. Within 90 calendar days of the cessation of in-water work each year, a comprehensive annual report will be submitted to NMFS for review. The report will synthesize all sighting data and effort during each activity for each year. NMFS will provide comments within 30 days after receiving annual reports, and the action agency or its non-federal designee will address the comments and submit revisions within 30 days after receiving NMFS comments. If no comments are received from the NMFS within 30 days, the annual report is considered completed. The report will include the following information:
    - Summaries of monitoring effort including total hours, observation rate by species and marine mammal distribution through the study period, accounting for sea state and other factors affecting visibility and detectability of marine mammals.
    - Analyses of the effects of various factors that may have influenced detectability of marine mammals (e.g., sea state, number of observers, fog/glare, and other factors as determined by the PSOs).
    - Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.
    - Marine mammal observation data with a digital record of observation data provided in digital spreadsheet format that can be queried.
    - Summary of implemented mitigation measures (i.e., shutdowns and delays).
    - Number of marine mammals during periods with and without project activities (and other variables that could affect detectability), such as: (i) initial sighting distances versus project activity at the time of sighting; (ii) closest point of approach versus project activity; (iii) observed behaviors and types of movements versus project activity; (iv) numbers of sightings/individuals seen versus project activity; (v) distribution around the source vessels versus project activity; and (vi) numbers of animals detected in the Shutdown Zone.
    - Analyses of the effects of project activities on listed marine mammals

Summary of Agency Contact Information

Reason for Contact	**Contact Information**
Consultation Questions	Greg Balogh: greg.balogh@noaa.gov Jenna Malek: jenna.malek@noaa.gov
Final Reports & Data Submittal	AKR.section7@noaa.gov

Reason for Contact	Contact Information
Stranded, Injured, or Dead Marine Mammal	Stranding Hotline (24/7 coverage) 877-925-7773
In the event that this contact information becomes obsolete	NMFS Anchorage Main Office: 907-271-5006

Listed Species and Critical Habitat

Endangered bowhead whales, threatened Beringia DPS bearded seals, and threatened Arctic ringed seals may occur within the entirety of the proposed action area. Endangered blue whales, endangered fin whales, endangered Western North Pacific gray whales, endangered Western North Pacific DPS humpback whales, threatened Mexico DPS humpback whales, endangered North Pacific right whales, endangered sperm whales, and endangered Western DPS Steller sea lions may occur along the proposed marine transit route. Critical habitat has been designated for North Pacific right whales (Figure 8) and Steller sea lions (Figure 10) but has not been designated for the other listed species. The action area along the marine transit route may cross through North Pacific right whale critical habitat and the Bogoslof foraging area of Steller sea lion critical habitat. The nearest major rookeries or haul-outs to the marine transit route portion of the proposed action area are on Akutan Island, Old Man Rocks, Cape Sedanka, and St. Lawrence Island.

Bowhead Whale

The bowhead whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on June 2, 1970 (35 FR 8491 (baleen whales listing); 35 FR 18319, December 2, 1970 (bowhead whale listing)), and continued to be listed as endangered following passage of the ESA. The only bowhead whale stock found in U.S. waters is the Western Arctic stock. Western Arctic bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 60°N and south of 75°N. Information on bowhead whale biology and habitat is available at:

https://www.fisheries.noaa.gov/species/bowhead-whale
http://www.afsc.noaa.gov/NMML/cetacean/
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

Givens et al. (2013) estimated that, from 1978 to 2011, the Western Arctic stock of bowhead whales increased at a rate of 3.7 percent (95 percent confidence interval of 2.8 to 4.7 percent) during which time abundance tripled from approximately 5,000 to approximately 16,000 whales. In 2011, the ice-based abundance estimate was 16,820 individuals (95 percent confidence interval, 15,704 to 18,928) (Givens et al. 2013). Using the 2011 population estimate of 16,820 and its associated coefficient of variation of 0.052, the most recent minimum population estimate for the Western Arctic stock of bowhead whales is 16,100 (Muto et al. 2019).

The majority of the Western Arctic bowhead whale stock migrates annually from wintering areas (December to March) in the northern Bering Sea, through the Chukchi Sea in the spring (April through May), to the eastern Beaufort Sea where they spend much of the summer feeding (June through early to mid-October) before returning again to the Bering Sea in the fall (September through December) to overwinter (Muto et al. 2019).

Bowhead whales have an extensive and varied acoustic repertoire that includes simple calls, call sequences, and complex songs. NMFS categorizes bowhead whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2018). Inferring from their vocalizations, bowhead whales should be most sensitive to frequencies between 20 Hz-5 kHz, with maximum sensitivity between 100-500 Hz (Erbe 2002b).

We expect that bowhead whales may be present along the marine transit route and possibly the lightering portions of the action area based on the location of reproductive, migratory, and feeding Biologically Important Areas (BIAs) within the action area in September and October (Clarke et al. 2015; Figures 3, 4, & 5). In addition to the BIAs that intersect with the action area, the Aerial Surveys of Arctic Marine Mammals (ASAMM) project 2018 data show bowhead whales in the proximity of Oliktok Dock and the transit area in September (Figure 6). Though bowheads do not tend to swim close to shore in this area, incoming barges will be passing through deeper waters as they approach the lightering area and thus may encounter cows with calves, feeding, and/or migrating whales.

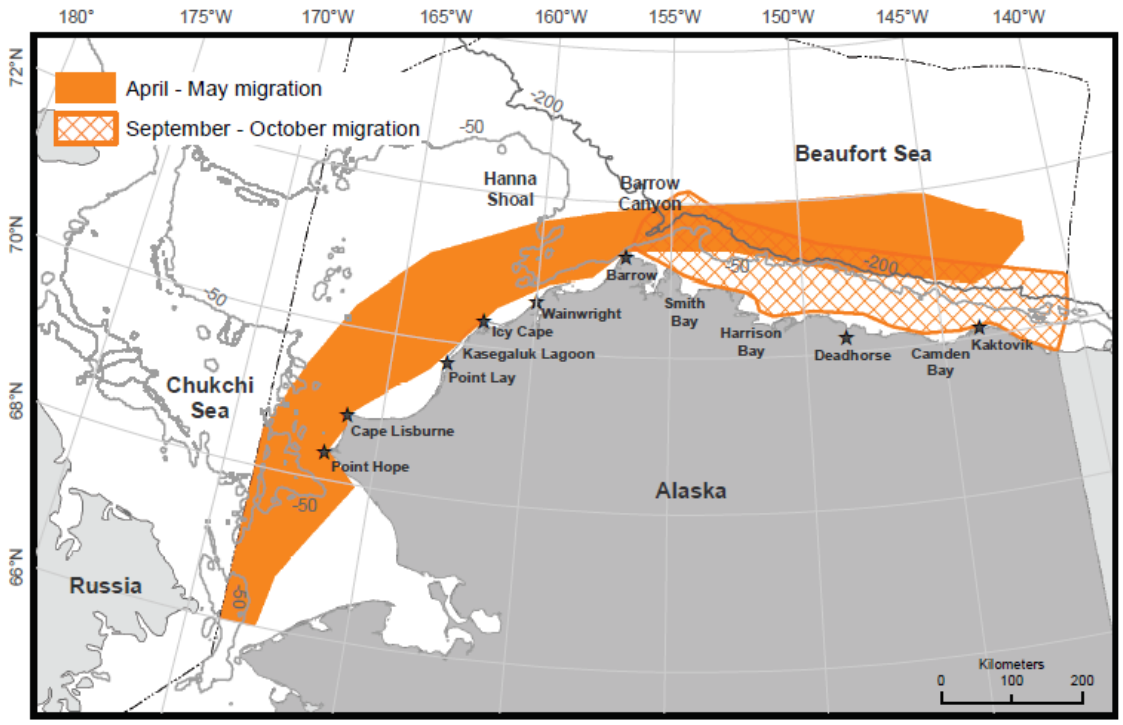

Figure 3. Bowhead whale migratory corridor BIAs for spring (April-May) and fall (September-October), determined from aerial- and ice-based surveys, satellite telemetry, and passive acoustic monitoring; also shown are the 50- and 200-m depth contours. (Clarke et al. 2015b, Figure 8.3)

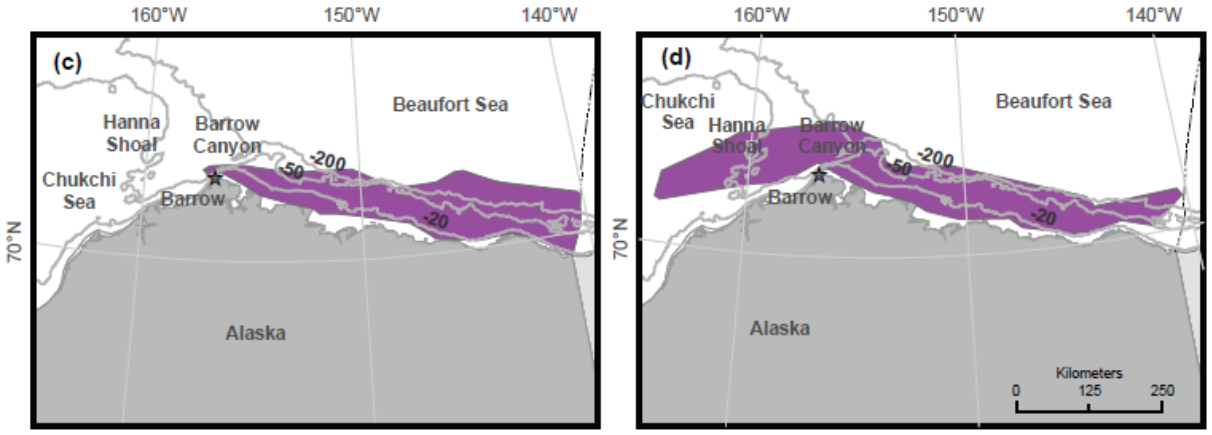

Figure 4. Bowhead whale reproduction BIAs during September (left panel) and October (right panel), determined from calf sightings collected during aerial- and ice-based surveys. Also shown are the 20-, 50-, and 200-m depth contours (Adapted from Clarke et al. 2015b, Figure 8.1).

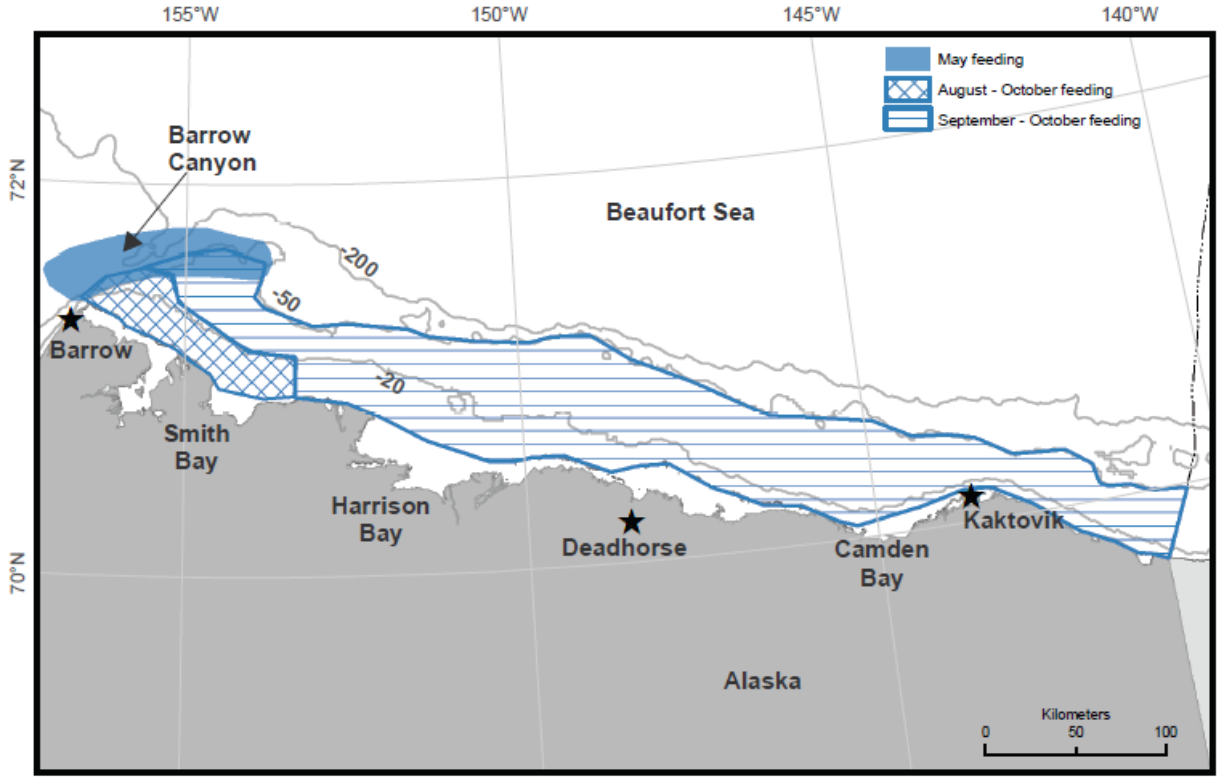

Figure 5. Bowhead whale feeding BIAs identified during the eastward spring migration in May near Barrow Canyon; from Smith Bay to Point Barrow in August through October, generally shoreward of the 20-m isobaths; and during the westward fall migration from September through October, generally shoreward of the 50-m isobath. BIAs were determined using aerial survey data. Also shown are the 20-, 50-, and 200-m depth contours (Clarke et al. 2015b, Figure 8.2).

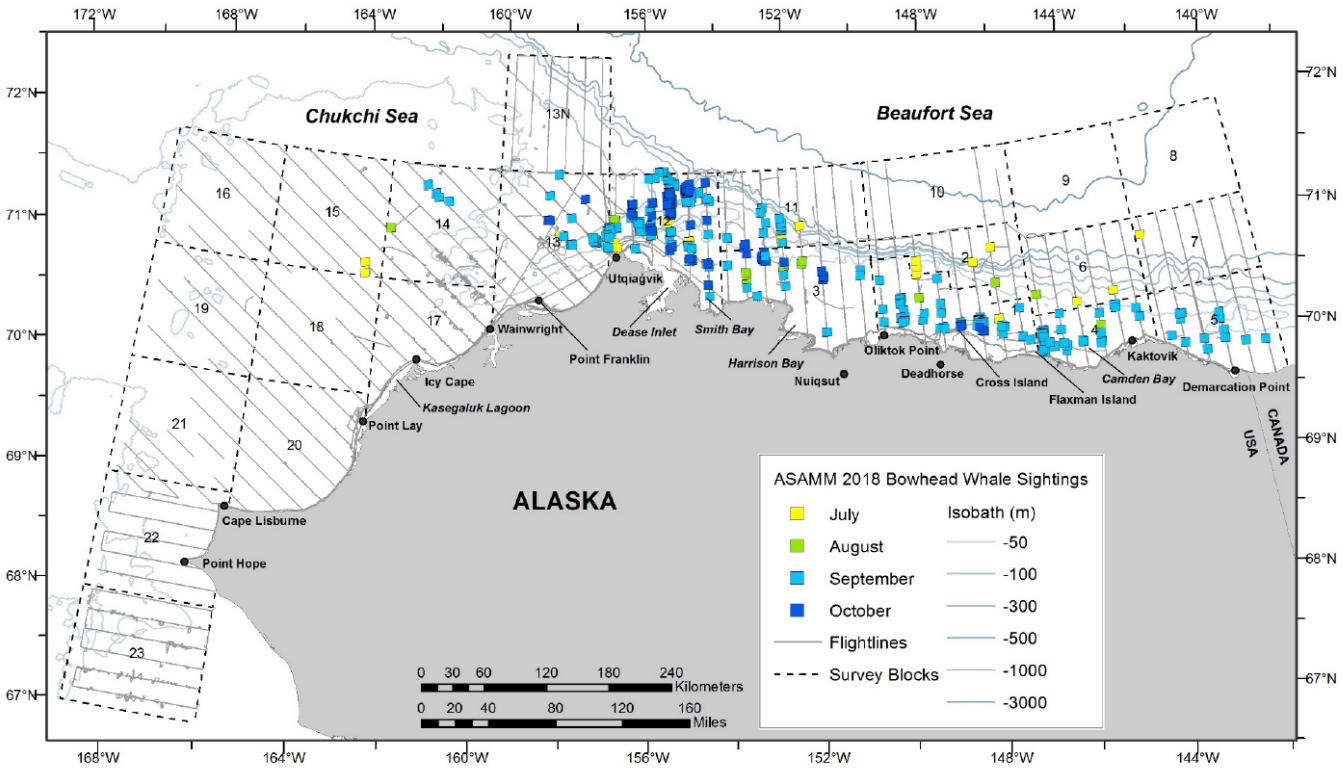

Figure 6. ASAMM bowhead whale sightings, 2018 (Clarke et al. 2019)

Blue Whale

The blue whale was listed under the ESCA as endangered across its global range in 1970 (35 FR 18319) after being depleted by whaling. Congress replaced the ESCA with the ESA in 1973, and blue whales continued to be listed as endangered. A recovery plan was published in 1998 (NMFS 1998), but critical habitat has not been designated. Information on blue whale biology and habitat is available at:

https://www.fisheries.noaa.gov/species/blue-whale
https://www.afsc.noaa.gov/nmml/species/species_blue.php
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

Blue whales found in Alaska are from the North Pacific population and comprised of the Central North Pacific and Eastern North Pacific stocks, estimated at 81 and 1,647 individuals, respectively (Carretta et al. 2017). Blue whales in the Central North Pacific stock spend winters

in lower latitudes in the western and central Pacific, including Hawaii, and feed in summer southwest of Kamchatka, south of the Aleutians, and in the Gulf of Alaska (Carretta et al. 2017). The Eastern Pacific stock spend winters off Mexico, Central America, and as far as 8°S, and feed during summer off the U.S. West Coast and to a lesser extent in the Gulf of Alaska (Carretta et al. 2017).

Blue whales are in the low frequency cetaceans functional hearing group (Southall et al. 2007). While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2018a). Baleen whales have inner ears that appear to be specialized for low-frequency hearing.

NMFS does not expect blue whales to be present in the Oliktok Dock portion of the action area as their range does not extend that far north. Vessels transiting from Dutch Harbor to Oliktok Dock may encounter blue whales, but based on the low population size of the two stocks found in Alaska and their preference for feeding in the Gulf of Alaska and south of the Aleutian Islands, an encounter is unlikely to occur.

Fin Whale

The fin whale was decimated by commercial whaling in the 1800s and early 1900s. It was listed as an endangered species under the ESCA on June 2, 1970 (35 FR 8491 (baleen whales listing); 35 FR 18319, December 2, 1970 (fin whale listing)), and continued to be listed as endangered following passage of the ESA. Information on fin whale biology and habitat is available at:

https://www.fisheries.noaa.gov/species/fin-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

Fin whales have been visually observed in the Bering Sea during winter months (Mizroch et al. 2009) and have been detected acoustically in the southeastern Bering Sea throughout the year (NMML, unpublished data, May 2007–May 2011). Additionally, in the northeastern Chukchi Sea, visual sightings and acoustic detections have been increasing, which suggests the stock may be re-occupying habitat used prior to large-scale commercial whaling (Muto et al. 2019). Most of the areas where sightings or detection of fin whales have occurred are feeding habitat, suggesting that fin whales will overlap with the proposed action's marine transit route.

Fin whales produce a variety of low-frequency sounds in the 10 Hz to 0.2 kHz range (Watkins 1981, Watkins et al. 1987, Edds 1988, Thompson et al. 1992). While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2018). Synthetic audiograms produced by applying models to X-ray computed tomography scans of a fin whale calf skull indicate the range of best hearing for fin whale calves to range from approximately 20 Hz to 10 kHz, with maximum sensitivities between 1 to 2 kHz (Cranford and Krysl 2015).

NMFS expects fin whales may be present along the marine transit route portion of the action area, but not near Oliktok Dock as there has been no documentation of fin whales occurring in the Beaufort Sea. Ferguson et al. (2015) identified a feeding BIA for fin whales in the Bering Sea where the highest densities of fin whales occur from June to September (Figure 8). Transit of project vessels (post July through the fall) overlaps with timing of the highest densities of fin whales in this area.

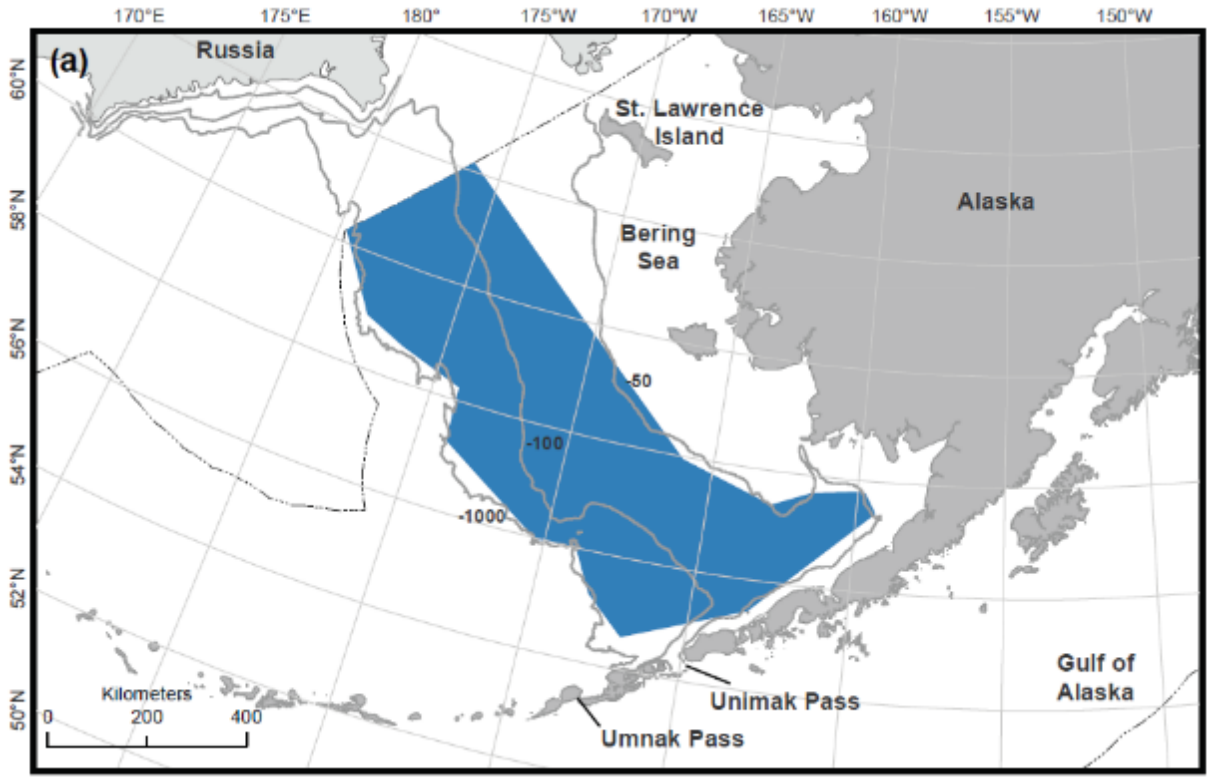

Figure 7**.** Fin whale BIA for feeding in the Bering Sea. Highest densities are from June through September, substantiated through ship-based surveys, acoustic recordings, and whaling data. Also shown are 50-, 100-, and 1,000-m isobaths, which were used to delineate the hydrographic domains in the region (Ferguson et al. 2015a, Figure 7.3).

North Pacific Right Whale

The right whale was listed as an endangered species under the ESCA on June 2, 1970 (35 FR 8491 (baleen whales listing); 35 FR 18319, December 2, 1970 (right whales listing)), and continued to be listed as endangered following passage of the ESA. NMFS later divided the listing of northern right whales into two separate endangered species: North Pacific right whales and North Atlantic right whales (73 FR 12024; March 6, 2008). Among right whales, only the North Pacific right whale occurs in Alaska. Information on biology and habitat of the North Pacific right whale is available at:

https://www.fisheries.noaa.gov/species/north-pacific-right-whale
https://www.fisheries.noaa.gov/action/critical-habitat-north-pacific-right-whales
https://www.fisheries.noaa.gov/alaska/marine-mammal-protection/north-pacific-right-whale-research-alaska
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

The North Pacific right whale is distributed from Baja California to the Bering Sea with the highest concentrations in the Bering Sea, Gulf of Alaska, Okhotsk Sea, Kuril Islands, and Kamchatka area. Right whales have been consistently detected in the southeastern Bering Sea around the localized area of designated critical habitat during spring and summer feeding seasons (Goddard and Rugh. 1998, Moore 2000, Moore et al. 2002, Zerbini et al. 2015, Rone et al. 2010, Rone et al. 2012). Acoustic detection of right whales indicate that they remain in the southeastern Bering Sea from May through December, with peak call detection in September (Munger and Hildebrand 2004, Stafford and Mellinger 2009). Of the 184 recent right whale sightings reported north of the Aleutian Islands, 182 occurred within the area designated as critical habitat in the Bering Sea.

A study of right whale ear anatomy suggests a total possible hearing rage of 10 Hz to 22 kHz (Parks et al. 2007). NMFS categorizes right whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2018).

We expect that North Pacific right whales may be present along the marine transit route, which runs just to the west of North Pacific right whale critical habitat (see Figures 1 and 8). Though project vessels will be avoiding critical habitat to the maximum extent possible, North Pacific right whales may be found outside of critical habitat across the transit route. However, because of the rare occurrence and scattered distribution of the species throughout its range, an encounter with a North Pacific right whale is unlikely to occur.

North Pacific Right Whale Critical Habitat

Critical habitat for the northern right whale was designated in the North Pacific Ocean on July 6, 2006 (71 FR 38277), and the same areas of critical habitat for the North Pacific right whale was re-designated in the eastern Bering Sea and in the Gulf of Alaska on April 8, 2008 (73 FR 19000). The physical or biological features (PBFs) deemed necessary for the conservation of North Pacific right whales include the presence of specific copepods (*Calanus marshallae*, *Neocalanus cristatus*, and *N. plumchris*), and euphausiids (*Thysanoessa Raschii*) that act as primary prey items for the species, and physical and oceanographic forcing that promote high productivity and aggregation of large copepod patches (50 CFR § 226.215).

The marine transit route portion of the action area is located to the west of designated critical habitat (see Figure 1) and project vessels will avoid traversing through critical habitat to the maximum extent possible.

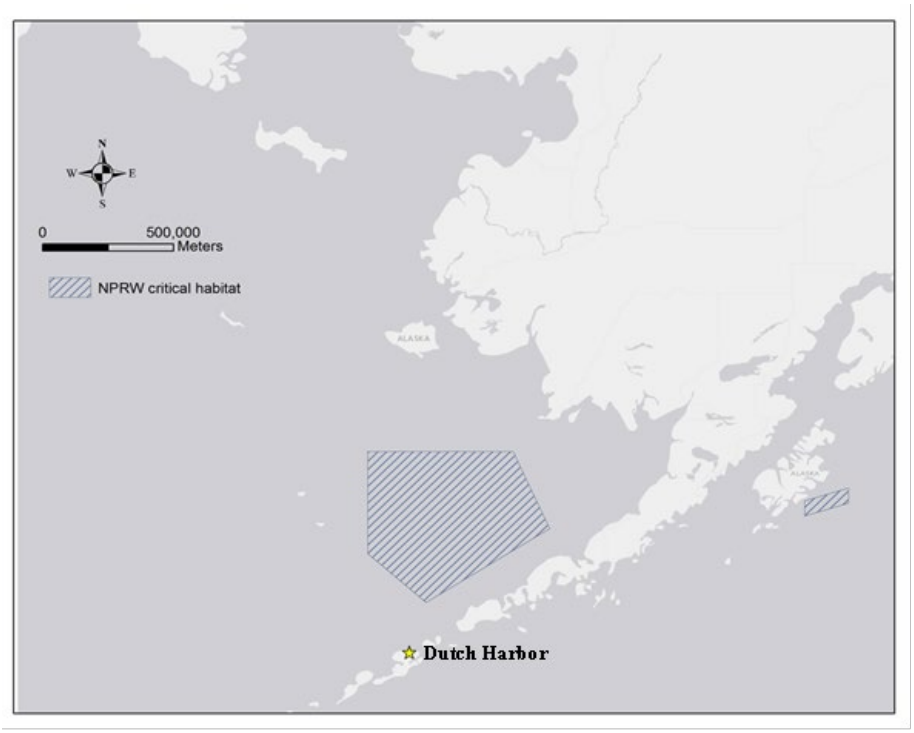

Figure 8**:** North Pacific right whale critical habitat in the Bering Sea and Gulf of Alaska**.**

Gray Whale

There are two genetically distinct populations of gray whales in the North Pacific Ocean (Cooke et al. 2013; Lang et al. 2011): the western North Pacific population that was listed as endangered in 1970 (35 FR 18319; December 2, 1970) under the ESCA and shows no apparent signs of recovery, and the eastern North Pacific population that has recovered from exploitation and was removed from listing under the ESA in 1994 (Carretta et al. 2013; Swartz et al. 2006). There is no designated critical habitat for the western North Pacific population. Information about gray whale biology and habitat can be found at:

https://www.fisheries.noaa.gov/species/gray-whale
https://www.afsc.noaa.gov/nmml/species/species_gray.php
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

The most recent estimate of the western North Pacific gray whale population is 271 individuals and it is believed to have increased at a rate of 3.4-4.8% per year from 1998-2018 (Cooke et al 2019). Most gray whales follow the coast during migration and stay within 1.2 miles (2 km) of the shoreline, except when crossing major bays, straits, and inlets from southeastern Alaska to the eastern Bering Sea (Braham 1984b). Gray whales use the nearshore areas of the Alaska Peninsula during the spring and fall migrations and are often found within the bays and lagoons, primarily north of the peninsula, during the summer (Navy 2006).

Gray whales are in the low frequency cetacean functional hearing group (Southall et al. 2007). Gray whales use multiple types of calls, ranging from 40 Hz 4 kHz. While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2018a). Baleen whales have inner ears that appear to be specialized for low-frequency hearing.

Western North Pacific gray whales have not been detected in the Chukchi or Beaufort seas, and their typical migratory route from the Sea of Okhotsk and North America is through the Gulf of Alaska.[2] Given that few western North Pacific gray whales occur in U.S. waters, it is possible but unlikely that western North Pacific gray whales would be encountered by project vessels along the marine transit route from Dutch Harbor to Oliktok Dock (Carretta et al. 2017).

Western North Pacific and Mexico DPS Humpback Whale

The humpback whale was listed as endangered under the ESCA on June 2, 1970 (35 FR 8491 (baleen whales listing; 35 FR 18319, December 2, 1970 (humpback whale listing)), and continued to be listed as endangered under the ESA. NMFS conducted a global status review that changed the status of humpback whales under the ESA and divided the species into 14 distinct population segments (DPS), three of which occur in waters of Alaska. The Western North Pacific DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as threatened; and the Hawaii DPS (which includes most humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is not listed (81 FR 62260; September 8, 2016). Critical habitat has been proposed for the Western North Pacific and Mexico DPSs (84 FR 54354). Additional information on humpback whale biology and habitat is available at:

https://www.fisheries.noaa.gov/species/humpback-whale
https://www.fisheries.noaa.gov/alaska/marine-mammal-protection/humpback-whale-research-alaska
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region
https://www.fisheries.noaa.gov/action/proposed-rule-designate-critical-habitat-central-america-mexico-and-western-north-pacific

The abundance estimate for humpback whales in the Bering Sea and Aleutian Islands is estimated to be 2,427 (CV= 0.2) animals, which includes whales from the Hawaii DPS (86.5%), Mexico DPS (11.3%), and Western North Pacific DPS (4.4%[3]) (NMFS 2016a, Wade et al. 2016).

[2]Dr. David Weller, NOAA Fisheries Southwest Fisheries Science Center, personal communication, September 19, 2017.
[3] For endangered Western North Pacific DPS we chose the upper limit of the 95% confidence interval from the Wade et al. (2016) estimate in order to be conservative due to their status.

Humpback whales produce a variety of vocalizations ranging from 20 Hz to 10 kHz (Winn et al. 1970, Tyack and Whitehead 1983, Payne and Payne 1985, Silber 1986, Thompson et al. 1986, Richardson et al. 1995b, Au 2000, Frazer and Mercado III 2000, Erbe 2002a, Au et al. 2006, Vu et al. 2012). NMFS categorizes humpback whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2018).

NMFS expects that humpback whales may be present along the marine transit route from Dutch Harbor to Oliktok Dock, particularly during the summer months. Humpback whales are found throughout the Aleutians Islands and the eastern Bering Sea during the summer (Zerbini et al. 2006) and have been found as far north as the northeastern Chukchi Sea (Clarke et al. 2014). Ferguson et al. (2015a) identified a humpback whale feeding BIA in the Aleutian Islands that includes both the north and south side of Unalaska (Figure 11), with the highest densities of humpbacks occurring from June through September, making it likely that project vessels may encounter humpback whales.

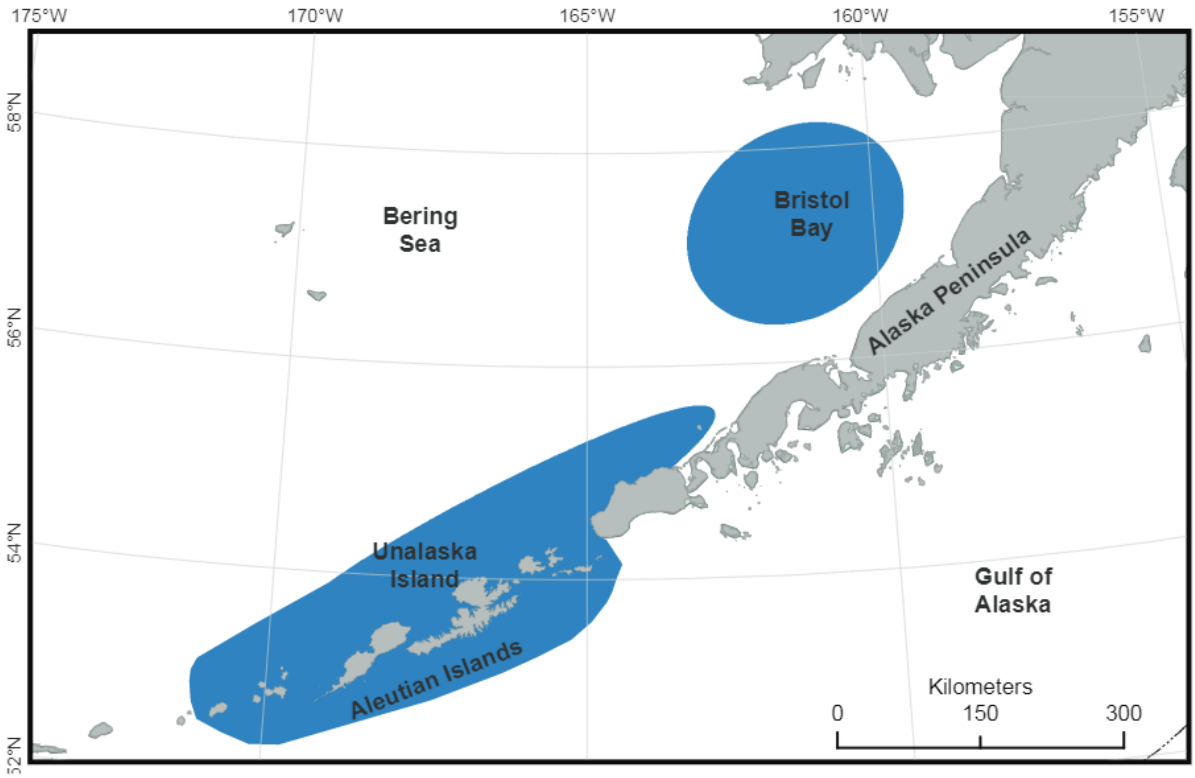

Figure 9. Humpback whale feeding BIAs identified around the Aleutian Islands and Bristol Bay. The highest whale densities were observed from June through September. These BIAs were based on a combination of satellite-tagging data, aerial- and vessel-based surveys, acoustic recordings, and photo-identification (Ferguson et al. 2015a, Figure 7.7).

Sperm Whale

The sperm whale was listed as an endangered species under the ESCA on June 2, 1970 (35 FR 8491), and continued to be listed as endangered following passage of the ESA. There is no current reliable estimate of the global abundance of sperm whales, or of the North Pacific stock in Alaska, and therefore the population trend of sperm whales in the North Pacific stock is also unknown (Muto et al. 2017). Information on sperm whale biology and habitat is available at:

https://www.fisheries.noaa.gov/species/sperm-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

Sperm whales are primarily found in deep waters, and sightings of sperm whales in water less than 300 m (984 ft) are uncommon. During summer, males are found in the Gulf of Alaska, Bering Sea, and waters around the Aleutian Islands (Mizroch and Rice 2013). Between 2001 and 2019 around the central and western Aleutian Islands, sighting surveys conducted by the NMFS Marine Mammal Laboratory showed that sperm whales were the most frequently sighted large whale species (MML, unpubl. data).

Sperm whales produce a variety of vocalizations ranging from 0.1 to 20 kHz (Weilgart and Whitehead 1993, Goold and Jones 1995, Møhl et al. 2003, Weir et al. 2007). Sperm whales are odontocetes (tooth whales) and are considered mid-frequency cetaceans with an applied frequency range of 150 Hz to 160 kHz (NMFS 2018). The only direct measurement of hearing was from a young stranded individual from which auditory evoked potentials were recorded and indicated a hearing range of 2.5 to 60 kHz (Carder and Ridgway 1990).

We expect sperm whales may be in the southern part of the marine transit route portion of the proposed action area as they commonly occur around the Aleutian Islands during the summer months (Muto et al. 2017).

Arctic Ringed Seal

Under the MMPA, NMFS recognizes one stock of Arctic ringed seals, the Alaska stock, in U.S. waters. This stock is part of the Arctic ringed seal subspecies. The Arctic ringed seal subspecies was listed as threatened under the ESA on December 28, 2012, primarily due to expected impacts within the foreseeable future on the population from declines in sea ice and snow cover stemming from climate change (77 FR 76706). Critical habitat has been proposed for the Arctic ringed seal (79 FR 73010). Information on ringed seal biology and habitat is available at:

https://www.fisheries.noaa.gov/species/ringed-seal
https://www.fisheries.noaa.gov/resource/document/status-review-ringed-seal-phoca-hispida-2010
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

Kelly et al. (2010) estimated the total population in the Chukchi and Beaufort seas in Alaska to be at least 300,000 ringed seals. This estimate is likely an underestimate since the Beaufort Sea surveys were limited to within 40 km from shore.

In September 2019, NMFS declared an Unusual Mortality Event (UME) for ice seals, recognized to have started on June 1, 2018. From the start date to the end of December 2019, the NMFS Standing Network had reports of 64 ringed seals (and 80 unidentified seals, some of which may have been ringed seals). The cause, or causes, of these deaths is currently being investigated by NMFS.

Ringed seals vocalize underwater in association with territorial and mating behaviors. Underwater audiograms for phocids suggest that they have very little hearing sensitivity below 1 kHz, and make calls between 90 Hz and 16 kHz (Richardson et al. 1995b). NMFS defines the function hearing range for phocids as 50 Hz to 86 kHz (NMFS 2018d).

We expect ringed seals may be present along the marine transit route in the Bering, Chukchi, and Beaufort seas, and near screeding activities at Oliktok Dock and the lightering area. Ringed seals are frequently observed in Harrison Bay and in waters adjacent to the Colville River Delta and Oliktok Point (Green and Negri 2005, 2006; Green et al. 2007; Hauser et al. 2008; Brandon et al. 2011). A shipboard monitoring program has documented hundreds of ringed seals during the open-water season from Oliktok Point (east of the Colville River) to Cape Halkett (west of the Colville River; Green and Negri 2005, 2006; Green et al. 2007). Ringed seals are expected to be the most commonly occurring pinniped in the proposed action area year-round.

NMFS proposed critical habitat for the Arctic ringed seal in the northern Bering, Chukchi, and Beaufort seas off of Alaska on December 9, 2014 (79 FR 73010). The proposed rule discusses the following physical and biological features (PBFs) essential to the conservation of Arctic ringed seals: 1) sea ice habitat suitable for the formation and maintenance of subnivean birth lairs; 2) sea ice habitat suitable as a platform for basking and molting; and 3) primary prey resources to support Arctic ringed seals, which are defined to be Arctic cod, saffron cod, shrimps, and Amphipods. NMFS has not yet published a final critical habitat designation for this species.

Beringia DPS Bearded Seal

The *E. b. nauticus* subspecies of the bearded seal inhabits the Pacific portion of the Arctic Ocean and the Bering and Okhotsk seas (Ognev 1935, Scheffer 1958, Manning 1974, Heptner et al. 1976)). NMFS concluded that the *E. b. nauticus* subspecies consists of two DPSs: the Okhotsk DPS in the Sea of Okhotsk, and the Beringia DPS, encompassing the remainder of the range of this subspecies (75 FR 77496; December 10, 2010). NMFS listed both DPSs as threatened under the ESA on December 28, 2012 (77 FR 76740). Only the Beringia DPS is found in U.S. waters (and the action area). Information on bearded seal biology and habitat is available at:

https://www.fisheries.noaa.gov/species/bearded-seal
https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-211.pdf

https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

A reliable population estimate is not available (Muto et al. 2017). In a core area of their range in the central and eastern Bering Sea, the Beringia DPS abundance was estimated to be 61,800 seals (Ver Hoef et al. 2013). Another study estimated the abundance for the entire range of the Beringia DPS at 155,150 seals (Cameron et al. 2010).

In September 2019, NMFS declared a UME for ice seals, recognized to have started on June 1, 2018. From the start date through the end of the December 2019, the NMFS Standing Network had reports of 85 bearded seals (and 80 unidentified seals, some of which may have been bearded seals). The cause, or causes, of these deaths is currently being investigated by NMFS.

Underwater audiograms for phocids suggest that they have very little hearing sensitivity below 1 kHz, and make calls between 90 Hz and 16 kHz (Richardson et al. 1995b). NMFS defines the function hearing range for phocids as 50 Hz to 86 kHz (NMFS 2018d).

NMFS expects bearded seals to be present along the marine transit route through the Bering, Chukchi, and Beaufort seas and near the screeding activities at Oliktok Dock and the lightering area. During the open-water period when the majority of the Willow MDP activities will occur, marine mammal monitoring programs (FEX Barging Project in 2005-2007) and geophysical surveys (Shell Offshore, Inc in 2010) have documented bearded seals in the waters seaward of the barrier islands near Oliktok Dock (Green and Negri 2005, 2006; Green et al. 2007; Brandon et al. 2011) and Hauser et al. (2008) also documented bearded seals seaward and landward of the barrier islands during seismic surveys. Though bearded seals may occur in much lower numbers compared to ringed seals during this time of year, they are still likely to be found in the proposed action area.

Western DPS Steller Sea Lions

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). On May 5, 1997, NMFS reclassified Steller sea lions into two DPSs based on genetic studies and other information (62 FR 24345); at that time the eastern DPS was listed as threatened and the western DPS was listed as endangered. On November 4, 2013, the eastern DPS was removed from the endangered species list (78 FR 66140). Information on Steller sea lion biology and habitat (including critical habitat) is available at:

https://www.fisheries.noaa.gov/species/steller-sea-lion
https://www.afsc.noaa.gov/nmml/species/species_steller.php
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

The most recent comprehensive aerial photographic and land-based surveys of Western DPS Steller sea lions in Alaska (Fritz et al. 2016, Sweeney et al. 2018) estimated a total Alaska population (both pups and non-pups) of 53,303 (Muto et al. 2019). There are strong regional

differences in trends in abundance of Western DPS Steller sea lions, with mostly positive trends in the Gulf of Alaska and eastern Bering Sea east of Samalga Pass (~170°W longitude) and generally negative trends to the west in the Aleutian Islands.

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 39 kHz in water (NMFS 2018).

NMFS expects western DPS Steller sea lions to be present in the action area around the southern and possibly central portions of the marine transit route. Steller sea lions are common in and around Dutch Harbor, which is within a 40 km radius of 3 western DPS Steller sea lion haulouts and 1 rookery. The transit route also crosses through the Bogoslof foraging area (see Steller Sea Lion Critical Habitat section below), and within ~20 nm of an additional haulout site on the east side of St. Lawrence Island (Figure 10).

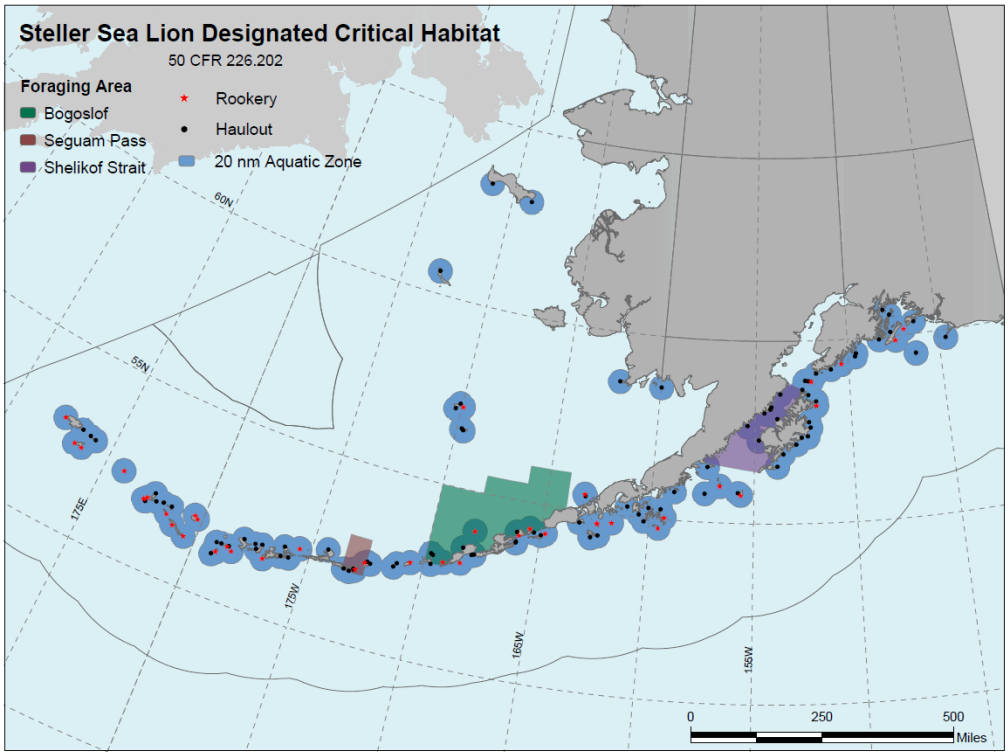

Figure 10. Designated Steller sea lion critical habitat west of 144°W longitude.

Steller Sea Lion Critical Habitat

NMFS designated critical habitat for Steller sea lions on August 27, 1993 (58 FR 45269). In Alaska, designated critical habitat includes the following areas as described at 50 CFR § 226.202.

1. Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery in Alaska.
2. Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.
3. Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144° W longitude.
4. Aquatic zones that extend 20 nm (37 km) seaward of each major haulout and major rookery in Alaska that is west of 144° W longitude.
5. Three special aquatic foraging areas: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area, as specified at 50 CFR § 226.202(c).

The marine transit route passes through the Bogoslof special foraging area of designated Steller sea lion critical habitat, as well as within 20 nm of a rookery and a haulout on Akutan Island, 2 haulouts located on/offshore of Unalaska Island (Cape Sedanka and Old Man Rocks, respectively), and a haulout on St. Lawrence Island.

Effects of the Action

For purposes of the ESA, "effects of the action" means all consequences to listed species or critical habitat that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.02). The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, extremely unlikely to occur, or completely beneficial. "Insignificant effects" relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate; insignificant effects should never reach the scale where take occurs.

This consultation includes NMFS guidance on the term "harass," which means to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016). The potential effects of the proposed action on listed species and critical habitat include acoustic disturbance (from vessels and screeding), vessel strike, habitat alteration, contamination, and invasive species.

Acoustic Thresholds

Since 1997, NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater sounds that might result in impacts to marine mammals (70 FR 1871, 1872; January 11, 2005). NMFS recently developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary threshold shifts (PTS; Level A harassment) (83 FR 28824; June 21, 2018). NMFS is in the process of developing guidance for behavioral disruption (Level B harassment onset). However, until such guidance is

available, NMFS uses the following conservative thresholds of underwater sound pressure levels, expressed in root mean square (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1362(18)(A)(ii)):

- impulsive sound: 160 dB_{rms} re 1 µPa
- continuous sound: 120 dB_{rms} re 1µPa

In addition, NMFS uses the following thresholds for in-air sound pressure levels from broadband sounds that cause Level B behavioral disturbance under section 3(18)(A)(ii) of the MMPA (16 U.S.C. § 1362(18)(A)(ii)):

- 100 dB_{rms} re 20µPa for non-harbor seal pinnipeds

Acoustic Disturbance

Possible impacts to marine mammals exposed to loud underwater or in-air noise include mortality (directly from the noise, or indirectly from a reaction to the noise), injury, and disturbance ranging from severe (e.g., abandonment of vital habitat) to mild (e.g., startle response) (Weilgart 2007; Hildebrand 2009; Shannon et al. 2016, Weilgart 2017). Vessel operations and screeding will introduce continuous sounds into the water and have the potential to result in Level B harassment. However, as we explain in more detail below, these activities are not expected to adversely affect these species due to the short-term nature of these operations and the implementation of the mitigation measures described above.

Vessel Noise

Vessels associated with the proposed action will likely expose listed marine mammals to acoustic stressors. However, the nature of the exposure (primarily vessel noise) will be low-frequency, with much of the acoustic energy emitted by project vessels at frequencies below the best hearing ranges of listed marine mammals in the proposed action area. In addition, because vessels will be in transit, the duration of the exposure to vessel noise will be temporary. The project vessels will emit continuous sound while in transit, which will alert marine mammals before the received sound level exceeds 120 dB. Therefore, a startle response is not expected. Rather, slight deflection and avoidance are expected to be common responses in those instances where there is any response at all. The implementation of mitigation measures described above is expected to further reduce the number of times marine mammals react to transiting vessels. NMFS concludes that any disturbance of marine mammals from vessel noise will be temporary, unlikely to alter normal behavioral patterns, and unlikely to rise to the level of take and, thus considers the effects to listed species from vessel noise to be insignificant.

Screeding

Received sound levels associated with screeding have not been measured at Oliktok Dock. However, screeding may produce sound source levels similar to underwater backhoe grading. Greene et al. (2008) measured underwater backhoe grading under the sea ice in the Beaufort Sea

near Prudhoe Bay at 125 dB re 1 µPa at 100 m from the source. They used a calculated transmission loss of 26.4 log r for determining threshold distances. While a transmission loss of 26.4 log r may be appropriate for activities under sea ice, where sound can attenuate quickly, it is not appropriate to use such a transmission loss in open water conditions. In the absence of a site-specific transmission loss, we chose to use 15 log r, NMFS's standard for when site-specific transmission loss is unknown. Using the measured distance of 100 m and 15 log r yields a distance of 215 m to attenuate to the 120 dB threshold for non-impulsive noise sources with a source level of 178 dB.

The applicant has agreed to a 215 m shutdown zone that will be monitored during screeding activities by a trained PSO. With proper implementation of this shutdown zone, we conclude that it is extremely unlikely that marine mammals will be exposed to noises from screeding that reach the level of harassment.

Marine Mammal Prey

Marine mammal prey such as zooplankton, benthic organisms (crab, shrimp, clams), and fish maybe be affected by noise from projects vessels and screeding. Impacts from sound energy generated by vessels and screeding would be expected to have a very minor impact on zooplankton and benthic populations due to large reproductive capacities and naturally high levels of predation. Additionally, screeding will occur in shallow waters that have been previously disturbed, potentially reducing the abundance of zooplankton and benthic organisms in the project area.

Fish are the primary prey for ringed seals in the Beaufort Sea and bowhead whales, fin whales, humpback whales, sperm whales, bearded seals, and Steller sea lions may also consume fish species throughout the proposed action area. Vessel sound source levels in the audible range for fish are typically 150–170 dB re 1 µPa/Hz (Richardson et al. 1995). There may be some avoidance by fish in the immediate area or temporary behavioral changes of prey species at close range, such as a startle or stress response. Project-related vessel sounds are not expected to cause direct injury to fish, and will behaviorally affect fish only at close range, for a short period of time.

The expected impact of noise on marine mammal prey for all project activities will be localized in space and time and immeasurably small, and thus any adverse effects to bowhead whales, blue whales, fin whales, North Pacific right whales, gray whales, humpback whales, sperm whales, ringed seals, bearded seals, or Steller sea lions will be negligible.

Vessel Strike

Ship strikes can cause severe wounds or death to marine mammals. An animal at the surface could be struck directly by a vessel, a surfacing animal could hit the bottom of a vessel, or a vessel's propeller could injure or kill an animal below the water's surface. An examination of all known ship strikes for large (baleen and sperm) whales from all shipping sources indicates vessel speed is a principal factor in whether a vessel strike results in death (Laist *et al.* 2001; Vanderlaan and Taggart 2007). In assessing records with known vessel speeds, Laist *et al.* (2001) found that most lethal ship strikes on large whales occurred when a vessel was traveling in excess of 24.1 km/h (14.9 mph; 13 kn).

Bowhead whales are among the slowest moving of whales, which may make them particularly susceptible to ship strikes (Laist et al. 2001). However, visible evidence of vessel strikes on bowhead whales harvested for subsistence are rare – only 10 of 505 examined whales from 1990 to 2012 showed clear evidence of scarring from ship propeller injuries (George et al. 2017) and there has been one reported vessel strike mortality of a bowhead whale between 2012-2019 (NMFS unpub. data). The low number of observations of ship-strike injuries (along with the very long lifespan of these animals) suggests that bowhead whales either do not often encounter vessels or they avoid interactions with vessels, suggesting that vessel strikes on bowhead whales are very unlikely to occur.

Between 1978 and 2011, there were 108 reports of whale-vessel collisions in Alaska waters, of which 93 were humpback whales (Neilson et al. 2012b), with an additional 29 humpback whale strikes reported between 2012 and 2019 (NMFS unpub. data). While humpback whales are among the marine mammal species most prone to ship strikes in Alaska, the majority of these strikes occur in Southeast Alaska (Neilson et al. 2012b). Of the 122 reported vessel strikes of humpback whales in Alaska between 1978 and 2019, none have occurred in the proposed action area.

Between 2012 – 2019, in addition to the previously mentioned bowhead whale, there have been 2 reported vessel strikes along the proposed marine transit route; one sperm whale and one fin whale (NMFS unpub. data). Due to the low densities and high dispersal of large whale species throughout the action area, as well as the slow speeds of the vessel transporting materials from Dutch Harbor to Oliktok Dock, and the low number of reported vessel strikes along the marine transit route, we conclude that a project-related vessel strike of blue, fin, North Pacific right, Western North Pacific or Mexico DPS humpback, western North Pacific gray, or sperm whales is extremely unlikely to occur.

The agility of pinnipeds is likely to preclude collision with vessels. There have been no reported vessel strikes of ringed or bearded seals in the Arctic, or Steller sea lions near Dutch Harbor. Pre-existing levels of vessel activity, such as associated with the Nikaitchuq offshore drilling site west of Foggy Island Bay in Simpson Lagoon, have not been shown to adversely affect seals (BOEM 2017a). We conclude that vessel strike of a pinniped by project vessels is highly unlikely to occur.

Habitat Alteration

Screeding

Benthic disturbance associated with project activities will likely result in temporary suspension of sediments in the water column. Sediment suspension will be localized in space, well within the confines of the 215 m radius shutdown area.

While bowhead whales are rarely observed shoreward of the barrier islands, ringed and bearded seals are regularly documented near the project location. However, the impact of habitat alteration is

expected to be minor due to the relatively small area affected and its low productivity, and thus adverse effects to ringed and bearded seals will be immeasurably small. Water quality would be temporarily affected in the localized area surrounding Oliktok Dock by increased turbidity. Turbidity and sedimentation rates are naturally high in this region due to ice scouring and gouging of the seafloor, significant delivery of suspended sediments from river outflow, and coastal erosion. Consequently, the additional suspension of sediment from screeding over a limited amount of time and area is not anticipated to have a measureable impact on water quality or to marine mammals.

Marine Mammal Prey

Much of the sediment that would be re-suspended from screeding is expected to quickly settle back into the substrate. Disruption and harm caused to the small number of prey that may be affected by temporarily re-suspended sediments associated with this project will have no measurable effect on overall prey availability in the area. Because of the small spatial and temporal scale at which this project may affect the widely-dispersed and expansive bearded and ringed seal foraging grounds, and the absence of bowhead whales from such shallow waters, we consider the effects of this project on listed species via disruption to marine mammal prey to be insignificant.

Contamination

Vessel Traffic and Pipeline Installation

Accidental spills or releases of petroleum products and other contaminants may occur during vessel transit, lightering, and the installation and operation of the pipeline crossing the Colville River. The size and composition of the spill influences the number of individuals that will be exposed to spilled material and the duration and severity of that exposure. Contact through the skin, eyes, or through inhalation and ingestion could result in temporary irritation or long-term endocrine or reproductive impacts, depending on the duration of exposure. The greatest threat to cetaceans, and presumably pinnipeds, is likely from the inhalation of the volatile toxic hydrocarbon fractions of fresh oil, which can damage the respiratory system (Hansen 1985, Neff 1990), cause neurological disorders or liver damage (Geraci and St. Aubin 1990), have anaesthetic effects (Neff 1990), and cause death (Geraci and St. Aubin 1990). However, for small spills there is anticipated to be a rapid dissipation of toxic fumes into the atmosphere from rapid aging of fresh refined oil, which limits potential exposure of whales to prolonged inhalation of toxic fumes.

Because any small spills of harmful pollutants will be very localized and will disperse, evaporate, and weather rapidly due to wind and tidal currents, NMFS concludes that small spills of harmful pollutants during project activities are extremely unlikely to result in exposure of marine mammals to those pollutants. Implementation of CPAI's mitigation measures, LSs, and BMPs will further reduce the likelihood of such exposure.

Marine Mammal Habitat – Wastewater

Project vessels may release graywater discharge, which is not regulated outside of the state's 3 nmi territory. Such discharge could increase pollutants in marine mammal habitat through

increased toxicity of water and prey species. However, due to the low levels of suspended solids in the discharge and the frequent mixing of seawater from wind and tides, any effects of wastewater on marine mammal habitat would be insignificant.

Marine Mammal Prey

An accidental release of contaminants could affect marine mammal prey through displacement, mortality, or reduced growth and fecundity. However, in the instances of a spill, such a localized area and small number of prey will be affected as to have no measurable effects upon overall marine mammal prey availability. Therefore, the effects of accidental spills associated with the proposed project on listed species via disruption to marine mammal prey are expected to be insignificant.

Invasive Species

The impact of nonnatives in marine systems includes extirpation of native species through competition or predation, a decline in biodiversity, shifts in ecosystem food webs, and changes to the physical structure of the habitat (Norse and Crowder 2005; Trombulak et al. 2004). Ballast water, used by vessels associated with this project, is a potential vector for introducing exotic species.

State and federal regulations are in place to reduce the transfer of aquatic invasive organisms (33 CFR 151). We conclude that CPAI's compliance with the protective federal and state rules and regulations will minimize the potential to introduce invasive species to Dutch Harbor or Harrison Bay to the extent that effects to listed species from invasive species are extremely unlikely.

North Pacific Right Whale Critical Habitat

The PBFs deemed necessary for the conservation of North Pacific right whales include the presence of specific copepods (*Calanus marshallae*, *Neocalanus cristatus*, and *N. plumchris*), and euphausiids (*Thysanoessa Raschii*) that are primary prey items for the species.

The potential effects of the action that may overlap with North Pacific right whale critical habitat include: acoustic disturbance from vessels transiting between Dutch Harbor and Oliktok Dock and exposure to spilled or otherwise-discharged fuel or other chemicals. While project vessels plan to avoid designated critical habitat, in the event that they do have to traverse through the area, we do not expect that noise from transiting project vessels would result in effects on aggregations of copepods or euphausiids, and therefore will not affect the PBFs associated with North Pacific right whale critical habitat.

Given the small number of trips by project vessels per year between Dutch Harbor and Oliktok Dock (~22) and the low likelihood of a spill occurring, we find it extremely unlikely that a fuel spill, other chemical spill, or discharge will occur as a result of this vessel traffic that would have more than a de minimis effect on the PBF for the critical habitat. Even if a small spill were to occur within or close to critical habitat, it would be expected to evaporate and dissipate within 24 hours, such that any effects to this PBF would be immeasurably small.

Steller Sea Lion Critical Habitat

NMFS designated critical habitat for Steller sea lions on August 27, 1993 (58 FR 45269). The following PBFs were identified at the time of listing:

1. Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery in Alaska.
2. Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.
3. Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144º W longitude.
4. Aquatic zones that extend 20 nm (37 km) seaward of each major haulout and major rookery in Alaska that is west of 144º W longitude.
5. Three special aquatic foraging areas: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area, as specified at 50 CFR § 226.202(c).

Designated critical habitat for Steller sea lions includes terrestrial, air, and aquatic habitats that support reproduction, foraging, rest and refuge. These designations were based on the location of terrestrial rookery and haulout sites where breeding, pupping, refuge and resting occurs; aquatic areas surrounding rookeries and haulouts, the spatial extent of foraging trips, and availability of prey items, and rafting sites. Air zones around terrestrial and aquatic habitats are also designated as critical habitat to reduce disturbance in these essential areas.

The 3-mile no transit zones are established and enforced around rookeries in the area for further protection. NMFS's guidelines for approaching marine mammals discourage vessels approaching within 100 yards of haulout locations. The Bogoslof foraging area historically supported large aggregations of spawning pollock (Fiscus and Baines 1966; Kajimura and Loughlin 1988). While vessels transiting from Dutch Harbor to Oliktok Dock will pass through the Bogoslof foraging area, noise associated with vessel operations is not anticipated to affect PBFs or impact foraging.

Spills or otherwise-discharged fuels may occur in Steller sea lion critical habitat during project-related vessel transit. However, mitigation measures will be implemented so that project vessels will avoid approaching within 3 nm (5.5 km) of known Steller sea lion rookeries and major haulouts, reducing the likelihood of released fuels from affecting critical habitat before dispersal and evaporation occurs.

Based on the short-term presence of vessels transiting throughout the action area, the limited number of transits each year, and the mitigation measures in place to avoid impacts to marine mammals and designated critical habitat, we anticipate any adverse effects to designated critical habitat for Steller sea lions would be immeasurably small.

Conclusion

Based on this analysis, NMFS concurs with your determination that the proposed action may affect, but is not likely to adversely affect the bowhead whale (*Balaena mysticetus*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), North Pacific right whale (*Eubalaena japonica*), Western North Pacific stock gray whale (*Eschrichtius robustus*), Western North Pacific distinct population segment (DPS) or Mexico DPS humpback whale (*Megaptera novaeangliae*), sperm whale (*Physeter macrocephalus*), Arctic subspecies ringed seal (*Phoca hispida hispida*), Beringia DPS bearded seal (*Erignathus barbatus*), the Western DPS Steller sea lion (*Eumetopias jubatus*), North Pacific right whale critical habitat, or Steller sea lion critical habitat. Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR § 402.16).

Please direct any questions regarding this letter to Jenna Malek at Jenna.Malek@noaa.gov or 907-271-1332.

Sincerely,

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