



NOAA FISHERIES

PROPOSED ACTION: Issuance of an Incidental Harassment Authorization to the City of Unalaska to Take Marine Mammals by Harassment Incidental to the Unalaska Marine Center Dock Replacement Project in Unalaska, Alaska.

TYPE OF STATEMENT: Environmental Assessment

LEAD AGENCY: U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

RESPONSIBLE OFFICIAL: Donna S. Wieting, Director
Office of Protected
Resources, National Marine
Fisheries Service

**FOR FURTHER
INFORMATION:** John Fiorentino
National Marine Fisheries Service
Office of Protected Resources
Permits and Conservation Division
1315 East West Highway
Silver Spring, MD 20910

LOCATION: Dutch Harbor, Unalaska, Alaska

ABSTRACT: This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources proposal to issue an Incidental Harassment Authorization to the City of Unalaska for the taking, by Level B harassment, of marine mammals, incidental to proposed dock construction activities on Unalaska Island, Alaska, March, 2017-February, 2018.

DATE: January 2017

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LIST OF ABBREVIATIONS OR ACRONYMS

Authorization	Incidental Harassment Authorization
BiOp	Biological Opinion
CFR	Code of Federal Regulations
cm	centimeters
Commission	Marine Mammal Commission
dB	decibel
DPS	distinct population segment
EA	Environmental Assessment
ESA	Endangered Species Act of 1973 (16 U.S.C. 1531 <i>et seq.</i>)
FONSI	Finding of No Significant Impact
FR	<i>Federal Register</i>
ft	feet
GOA	Gulf of Alaska
IHA	Incidental Harassment Authorization
ITA	Incidental Take Authorization
ITS	Incidental Take Statement
kg	kilogram
km	kilometer
m	meter
mi	mile
MMPA	Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1631 <i>et seq.</i>)
μPa	micropascal
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act of 1969 (42 U.S.C. 4321 <i>et seq.</i>)
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration

CHAPTER 1 – INTRODUCTION AND PURPOSE AND NEED

1.1 BACKGROUND

The Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq.*) generally prohibits the incidental taking of marine mammals. The MMPA defines take as “...to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal...”; and further defines harassment as any act of pursuit, torment, or annoyance which: (1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

There are exceptions, however, to the MMPA’s prohibition on take. The National Marine Fisheries Service, Office of Protected Resources (NMFS, hereinafter, we) may authorize the incidental but not intentional taking of marine mammals by harassment upon the request of a U.S. citizen provided NMFS follows certain statutory and regulatory procedures and make determinations. We discuss this exception in more detail in section 1.2.

The National Environmental Policy Act (NEPA) requires federal agencies to examine the environmental impacts of their proposed actions within the United States and its territories. A NEPA analysis is a public document that provides an assessment of the potential effects a major federal action may have on the human environment, which includes the natural and physical environment. Because our issuance of an authorization would allow for the taking of marine mammals, consistent with provisions under the MMPA and incidental to the applicant’s activities, we consider this a major federal action subject to NEPA; therefore, NMFS prepared this Environmental Assessment (EA) pursuant NEPA (42 U.S.C. 4321 *et seq.*) and the Council on Environmental Quality Regulations (40 CFR §§1500-1508).

1.1.1. APPLICANTS INCIDENTAL TAKE AUTHORIZATION REQUEST

The City of Unalaska (COU) has requested an Incidental Harassment Authorization (Authorization) to take marine mammals by harassment incidental to construction activities as part of a dock expansion project at the existing Unalaska Marine Center (UMC) Dock in Unalaska, Alaska. In response to the COU’s request, NMFS proposes to issue an Authorization to the COU under Section 101(a)(5)(D) of the MMPA, which would allow the agency to take marine mammals, incidental to the dock construction project, March 1, 2017-February 28, 2018. NMFS does not have the authority to permit, authorize, or prohibit the COU’s construction activities under Section 101(a)(5)(D) of the MMPA, as that authority lies with the U.S. Army Corps of Engineers.

¹ NMFS may issue an Authorization if, after NMFS provides a notice of a proposed authorization to the public for review and comment: (1) NMFS makes certain findings; and (2) the taking is limited to harassment.

² NMFS would not issue an Authorization if it cannot make certain findings.

The COU proposes to remove portions of the existing UMC Dock in Dutch Harbor, Unalaska, and to construct a new and larger dock in its place. The project entails impact pile driving, vibratory pile driving, vibratory pile removal, and quarry development. The construction may temporarily disturb Steller sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*), humpback whale (*Megaptera novaeangliae*), and killer whale (*Orcinus orca*) within and around the harbor. The COU proposes to complete the dock construction activities over 245 days during the period March 1, 2017 through February 28, 2017.

The following aspects of the proposed activity would likely result in the take of marine mammals: noise generated by impact pile driving, vibratory pile driving, and vibratory pile removal. We describe the COU’s construction activities in more detail in section 2.2.

1.1.2 MARINE MAMMALS IN THE ACTION AREA

There are four marine mammal species with confirmed occurrence in the action area: Steller sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulina*), humpback whales (*Megaptera novaeangliae*), and killer whales (*Orcinus orca*) (Table 1). All of these species could experience Level B harassment incidental to the COU’s dock construction activities.

Table 1: General information on marine mammals that could potentially experience Level B harassment as a result of the proposed dock construction in Dutch Harbor, Unalaska, March 2017 through February 2018.

Species	Stock	MMPA Status	ESA Status	Occurrence In/Near Project	Seasonality	Abundance
Harbor seal (<i>Phoca vitulina richardsi</i>)	Aleutian Islands	Protected	-	Common	Year-round	5,772
Steller sea lion (<i>Eumetopias jubatus</i>)	Western Distinct Population Segment (DPS)	Depleted, Strategic	Endangered	Common	Year-round	49,497
Killer whale (<i>Orcinus orca</i>)	Eastern North Pacific, Alaska Resident	Protected	-	Unknown	Summer, Fall	2,347
Killer whale (<i>Orcinus orca</i>)	Gulf of Alaska, Aleutian Islands, and Bering Sea Transient	Protected	-	Unknown	Year-round	587
Humpback whale (<i>Megaptera novaeangliae</i>)	Central North Pacific	Depleted, Strategic	n/a*	Seasonal	Summer	10,103
Humpback whale (<i>Megaptera novaeangliae</i>)	Western North Pacific	Depleted, Strategic	n/a*	Seasonal	Summer	1,107

*The newly defined DPSs (81 FR 62259) do not currently align with the stocks under the MMPA.

1.2 PURPOSE AND NEED

1.2.1 DESCRIPTION OF THE PROPOSED ACTION

NMFS proposes to issue an IHA to COU pursuant to Section 101(a)(5)(A) of the MMPA for the taking of small numbers of marine mammals incidental to proposed dock construction activities on Unalaska Island, Alaska. The IHA will be valid from March, 2017- February, 2018, and authorizes takes by Level B, harassment of marine mammals incidental to dock construction activities including impact pile driving, vibratory pile driving, vibratory pile removal, and quarry development.

1.2.2. PURPOSE

The primary purpose of NMFS' proposed action is to authorize the take of marine mammals incidental to the COU's proposed dock construction activities. The Authorization would exempt the COU from the take prohibitions contained in the MMPA.

To authorize the take of marine mammals incidental to a specified activity under the MMPA, NMFS must evaluate the best available information to determine whether the take would have a negligible impact on marine mammal species or stocks and have an unmitigable impact on the availability of affected marine mammal species for certain subsistence uses.

In addition, NMFS must prescribe, where applicable, the permissible methods of taking and other means of effecting the least practicable adverse impact on the species or stocks of marine mammals and their habitat (*i.e.*, mitigation), paying particular attention to rookeries, mating grounds, and other areas of similar significance.

If appropriate and where relevant, NMFS must also prescribe the means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. Authorizations must also include requirements or conditions pertaining to the monitoring and reporting of such taking.

1.2.3 NEED

U.S. citizens seeking to obtain authorization for the incidental take of marine mammals under NMFS jurisdiction must submit such a request (in the form of an application). The COU submitted an adequate and complete application on July 30, 2016, demonstrating both the need and potential eligibility for issuance of an Authorization in connection with the activities described in section 1.1.1. NMFS now has a corresponding duty to determine whether and how we can authorize take by Level B harassment incidental to the activities described in the COU's application (COU 2016a). NMFS' responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame the need for this proposed action.

Any alternatives considered under NEPA must meet the agency's statutory and regulatory requirements. Our described purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects.

1.3 THE ENVIRONMENTAL REVIEW PROCESS

In accordance with the CEQ Regulations and agency policies for implementing NEPA, NMFS, to the fullest extent possible, integrates the requirements of NEPA with other regulatory processes required by law or by agency practice so that all procedures run concurrently, rather than consecutively. This

includes coordination within NOAA, (e.g., the Office of the National Marine Sanctuaries) and with other regulatory agencies (e.g., the U.S. Fish and Wildlife Service [USFWS]), as appropriate, during NEPA reviews prior to implementation of a proposed action to ensure that requirements are met. Regarding the issuance of Authorizations, we rely substantially on the public process required by the MMPA for preparing proposed Authorizations to develop and evaluate relevant environmental information and provide a meaningful opportunity for public participation when we prepare corresponding NEPA documents. We fully consider public comments received in response to the publication of proposed Authorizations during the corresponding NEPA review process.

1.3.1 THE NATIONAL ENVIRONMENTAL POLICY ACT

NEPA requires federal agencies to examine the environmental impacts of their proposed actions within the United States and its territories. A NEPA analysis is a public document that provides an assessment of the potential effects a major federal action may have on the human environment, which includes the natural and physical environment. Major federal actions include activities that federal agencies fully or partially fund, regulate, conduct or approve. NMFS issuance of Authorizations allows for the taking of marine mammals albeit consistent with provisions under the MMPA and incidental to the applicant's activities and is considered a major federal action. Therefore, NMFS analyzes the environmental effects associated with authorizing incidental takes of protected species and prepares the appropriate NEPA documentation.

1.3.2 SCOPING AND PUBLIC INVOLVEMENT

The NEPA process is intended to enable NMFS to make decisions based on an understanding of the environmental consequences and take actions to protect, restore, and enhance the environment. An integral part of the NEPA process is public involvement. Early public involvement facilitates the development of an EA and informs the scope of issues to be addressed in the EA. Although agency procedures do not require public involvement prior to finalizing an EA, NMFS determined the publication of the *Federal Register* notice of the proposed Authorization (81 FR 78969, November 10, 2016) was the appropriate step to involve the public to understand the public concerns for the proposed action, identify significant issues related to the proposed action and obtain the necessary information to complete an analysis. The notice of the proposed Authorization and the corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments for our consideration in both the MMPA and NEPA decision-making processes. The notice of the proposed Authorization summarized our purpose and need; included a statement that we would prepare an EA for the proposed action; and invited interested parties to submit written comments concerning the COU's application, our proposed Authorization, and our preliminary analyses and findings including those relevant to the consideration of the draft EA. The public will be able to submit comments during a 30-day comment period that begins the date that the notice of the proposed Authorization is published in the *Federal Register*.

1.4 OTHER ENVIRONMENTAL LAWS OR CONSULTATION

NMFS must comply with all applicable federal environmental laws, regulations, and Executive Orders (EO) necessary to implement a proposed action. NMFS evaluation of and compliance with environmental laws, regulations and EOs is based on the nature and location of the applicants proposed activities and NMFS proposed action. Therefore, this section only summarizes

environmental laws and consultations applicable to NMFS' issuance of an Authorization to the COU. There are no other environmental laws, regulations, EOs, consultations, federal permits or licenses applicable to NMFS' issuance of an Authorization to the COU.

1.4.1 ENDANGERED SPECIES ACT

The Endangered Species Act (ESA) established protection over and conservation of threatened and endangered species (T&E) and the ecosystems upon which they depend. An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The USFWS and NMFS jointly administer the ESA and are responsible for the listing of species (designating a species as either threatened or endangered) and designating geographic areas as critical habitat for (T&E) species. The ESA generally prohibits the "take" of an ESA-listed species unless an exception or exemption applies. The term "take" as defined in section 3 of the ESA means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Section 7(a)(2) requires each federal agency to ensure that any action it authorizes, funds or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a federal agency's action may affect a listed species, that agency is required to consult with NMFS and/or the USFWS under procedures set out in 50 CFR Part 402. NMFS and USFWS can also be action agencies under section 7. Informal consultation is sufficient for species the action agency determines are not likely to be adversely affected if NMFS or USFWS concurs with the action agency's findings, including any additional measures mutually agreed upon as necessary and sufficient to avoid adverse impacts to listed species and/or designated critical habitat.

Our proposed issuance of an Authorization is a federal action subject to ESA section 7 consultation requirements. Therefore we requested consultation under section 7 with the NMFS Alaska Regional Office for the proposed Authorization to the COU for the incidental take of ESA-listed species based on the COU's proposed action to conduct dock construction activities on Unalaska Island. A biological opinion will be issued prior to finalizing the environmental assessment. In addition, the U.S. Army Corps of Engineers (USACE), as the Federal agency that will permit the proposed construction project, provided a Biological Assessment (via PND Engineers, Inc., which acted as the designated federal representative for USACE), on their action with the NMFS Alaska Regional Office, to fulfill the requirements of formal consultation under ESA section 7.

There are two marine mammal species listed as endangered or threatened under the ESA with confirmed or possible occurrence in the proposed project area: the Steller sea lion, specifically the western Distinct Population Segment (DPS); and humpback whale, specifically the Western North Pacific DPS and Mexico DPS. Under the ESA, NMFS has designated critical habitat for Steller sea lions based on the location of terrestrial rookery and haulout sites, spatial extent of foraging trips, and availability of prey items (50 CFR 226.202). Steller sea lion critical habitat is defined by a 20-nautical-mile (37-km) radius (straight line distance) encircling a major haulout or rookery. The COU's proposed construction activities are within 20 nm of three haulouts and one rookery for Steller sea lions.

1.4.2 MARINE MAMMAL PROTECTION ACT

We discuss the MMPA and its provisions that pertain to the proposed action described within section 1.2.

1.5 SCOPE OF ENVIRONMENTAL ANALYSIS

This EA was prepared in accordance with NEPA (42 USC 4321, *et seq.*) and CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508). The analysis in this EA addresses potential impacts to the human environment and natural resources, specifically marine mammals and their habitat, resulting from NMFS’ proposed action to authorize incidental takes associated with the COU’s proposed dock replacement project. We analyze direct, indirect, and cumulative impacts related to authorizing incidental take of marine mammals under the MMPA. The scope of our analysis is limited to the decision for which we are responsible (i.e. whether or not to issue the Authorization). This EA is intended to provide focused information on the primary issues and impacts of environmental concern, which is our issuance of the Authorization for the take of marine mammals incidental to COU’s activities, and the mitigation and monitoring measures to minimize the effects of that take. For these reasons, this EA does not provide a detailed evaluation of the effects to the elements of the human environment listed in Table 2 below.

Table 2: Components of the human environment not affected by our issuance of an Authorization

Biological	Physical	Socioeconomic / Cultural
Amphibians	Air Quality	Commercial Fishing
Humans	Essential Fish Habitat	Military Activities
Non-Indigenous Species	Geography	Oil and Gas Activities
Seabirds	Land Use	Recreational Fishing
	Oceanography	Shipping and Boating
	State Marine Protected Areas	Recreational Diving
	Federal Marine Protected Areas	National Historic Preservation Sites
	National Estuarine Research Reserves	National Trails and Nationwide Inventory of Rivers
	National Marine Sanctuaries	Low Income Populations
	Park Land	Minority Populations
	Prime Farmlands	Indigenous Cultural Resources
	Wetlands	Public Health and Safety
	Wild and Scenic Rivers	Historic and Cultural Resources
	Ecologically Critical Areas	

We have based the scope of the proposed action and nature of the alternatives considered in this EA on the relevant requirements in section 101(a)(5)(D) of the MMPA. Thus, our authority under the MMPA bounds the scope of our alternatives. We conclude that this analysis – when combined with the analyses in the following documents – fully describes the impacts associated with the proposed project with mitigation and monitoring for marine mammals. After conducting an independent review of the information and analyses for sufficiency and adequacy, we incorporate by reference the relevant analyses on the COU’s proposed action as well as a discussion of the affected environment and environmental consequences within the following documents per 40 CFR 1502.21:

- NMFS’ notice of the proposed Authorization in the *Federal Register* (81 FR 78969, November 10, 2016) (NMFS, 2016); and
- The COU’s *Request for an Incidental Harassment Authorization Under the Marine Mammal protection Act for the Unalaska Marine Center Dock Positions III and IV*

Replacement Project (COU, 2016).

- Biological Assessment: Unalaska Marine Center Dock Positions III and IV Replacement Project, Unalaska, Alaska. Prepared for the U.S. Army Corps of Engineers. PND Engineers. November 11, 2016.

CHAPTER 2 – ALTERNATIVES

2.1 INTRODUCTION

As described in Chapter 1, the National Marine Fisheries Service (NMFS) Proposed Action is to issue an Incidental Harassment Authorization (IHA) to authorize the take of small numbers of marine mammals incidental to the City’s proposed construction activities. NMFS Proposed Action is triggered by the City’s request for an IHA per the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*). In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) Regulations, NMFS is required to consider alternatives to the Proposed Action. This includes the no action and other reasonable course of action associated with authorizing incidental take of protected species. The evaluation of alternatives under NEPA assists NMFS with ensuring that any unnecessary impacts are avoided through an assessment of alternative ways to achieve the purpose and need for our Proposed Action that may result in less environmental harm. To warrant detailed evaluation under NEPA, an alternative must be reasonable along with meeting the stated purpose and need for the proposed action. For the purposes of this EA, an alternative will only meet the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA. Therefore, NMFS applied the following screening criteria to the alternatives to identify which alternatives to carry forward for analysis. Accordingly, an alternative must meet the following criteria to be considered “reasonable”.

The MMPA requires NMFS to prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider City’s proposed mitigation measures, as well as other potential measures, and assess how such measures could minimize impacts on the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death, wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);

- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Alternative 1 includes a suite of mitigation measures intended to minimize any potential adverse effects to marine mammals. This chapter describes both alternatives and compares them in terms of their environmental impacts and their achievement of objectives.

2.2 DESCRIPTION OF the COU’S PROPOSED ACTIVITIES

The City plans to replace and expand an existing dock facility involving in-water removal and construction activities. We presented a general overview of the COU’s proposed construction activities in our *Federal Register* notice of the proposed Authorization (81 FR 78969, November 10, 2016). Also, the COU’s application (COU, 2016) describes the construction protocols in detail. We incorporate those descriptions by reference in this EA and briefly summarize them here.

2.2.1 SPECIFIED TIME AND SPECIFIED AREA

In-water and over-water construction of Phase 1 (all sheet pile installation, all in-water pipe pile installation, most upland pipe pile installation, and fill placement) is planned to occur between approximately March 1, 2017 and November 1, 2017. Phase 2 is planned to occur between approximately May 1, 2018 and October 1, 2018. Some of the upland pipe pile for utilities may be driven in upland fill away from the dock face during Phase 2. The COU proposes to use the following general construction sequence, subject to adjustment by the construction contractor’s means and methods:

Construction Phase 1 (2017):

- Mobilization of equipment and demolition of the existing dock Positions III and IV and removal of any existing riprap/obstructions (March – May 2017).
- Development of the quarry for materials.
- Installation (and later removal) of temporary support piles for contractor’s template structures and barge support.
- Installation of the new sheet pile bulkhead dock. This includes driving sheet piles, placing fill within the cell to grade, and compaction of fill
- Installation of fender and platform support piles in the water adjacent to the dock and miscellaneous support piles within the completed sheet pile cells.
- Installation of pre-assembled fender systems (energy absorbers, sleeve piles, steel framing, and fender panels).
- Installation of the crane support piles
- Installation of temporary utilities and gravel surface to provide functional dock capability for the 2017/2018 season.

Construction Phase 2 (2018):

- Installation of concrete grade beam for crane rails, utility vaults, and dock surfacing.

- Installation of electrical, sewer, fuel, water, and storm drainage utilities.

Pile removal and pile driving is expected to occur between March 1 and November 1, 2017. In the summer months (April – September), 12-hour workdays in extended daylight will likely be used. In winter months (October – March), shorter 8-hour to 10-hour workdays in available daylight will likely be achievable. Work windows may be extended or shortened if or when electrical lighting is used. The daily construction window for pile driving or removal will begin no sooner than 30 minutes after sunrise to allow for initial marine mammal monitoring to take place, and will end 30 minutes before sunset to allow for pre-activity monitoring. It is assumed that sound associated with the pile driving and removal activities will be put into the water approximately 50% of the total estimated project duration of 245 days (2,940 hours for 12-hour workdays). The remaining 50% of the project duration will be spent on activities that provide distinct periods without noise from pile driving or drilling such as installing templates and braces, moving equipment, threading sheet piles, pulling piles (without vibration), etc. During this time, a much smaller area will be monitored to ensure that animals are not injured by equipment or materials.

The UMC Dock is located in Dutch Harbor in the City of Unalaska, on Amaknak Island, Alaska (see Figure 5 of the application). Dutch Harbor is separated from the adjacent Iliuliuk Bay by a spit. The dock is located in Section 35, Township 72 South, Range 118 West, of the Seward Meridian. Tidelands in this vicinity are owned by the COU. Some of the adjacent uplands are owned by the COU and some are leased by the COU from Ounalashka Corporation. Adjacent infrastructure includes Ballyhoo Road and the Latitude 54 Building in which the COU Department of Ports and Harbors offices and facilities are currently housed. Neighboring docks include the USCG Dock and the existing UMC dock positions. Other marine facilities within Dutch Harbor include Delta Western Fuel, the Resolve-Magone Dock, North Pacific Fuel, the Kloosterboer Dock, and the COU's Light Cargo Dock and Spit Dock facilities, as shown in Figure 5 of the application. APL Limited is located within Iliuliuk Bay, and the entrance channel to Iliuliuk Harbor is south of Dutch Harbor.

2.2.2 CONSTRUCTION ACTIVITIES

The COU proposes to install an OPEN CELL SHEET PILE™ (OCSP) dock at UMC Dock Position III and IV, replacing the existing pile-supported structure and providing a smooth transition between the UMC facility and the USCG dock. The OCSP dock will be constructed of PS31 flat sheet piles (web thickness of 0.5 inches and width between interlocks of 19.69 inches). In order to replace the existing timber pile-supported dock, the dock construction would include installation of the following:

- Approximately forty (40) 30-inch diameter steel fender and transition platform support piles;
- Approximately thirty (30) 30-inch diameter miscellaneous steel support piles
- Approximately one hundred fifty (150) 30-inch diameter steel crane rail support piles (approximately 25 of which are above the high tide line (HTL));
- Approximately two hundred (150) 18-inch steel piles (H or round) used for temporary support of the sheet pile during construction (to be removed prior to completion);
- Approximately 1,800 PS31 flat sheet piles (approximately 100 of which are above the high tide line (HTL)); and
- Placement of approximately 110,000 cubic yards of clean fill.

The anticipated project quantities are shown in Table 3.

Concurrent with the dock construction, a material source will be developed in the hillside adjacent to Dock Position VII. The quarry will provide material for dock fill and other future projects, and the cleared area will be used for COU port offices and associated parking after the quarry is completed. The quarry will be developed through blasting benches in the rock face, with each bench being approximately 25 feet high, with the total height being approximately 125 feet. Quarry materials will be transported the short distance to the adjacent project site using heavy equipment.

Table 3: Total project quantities

Item	Size and Type, Location	Below Mean High Water (MHW) (El. = 3.4)	Below High Tide Line (HTL) (El. = 4.7)	Total
Surface Area of Dock (Acres)	-	2.1	2.3	3.1
Surface Area of Water Filled (Acres)	-	2.1	2.8	2.8
Gravel Fill (Cubic Yards)	Clean Fill; Within dock	74,000	80,000	110,000
Piles to be Removed (Each)	Steel	195	195	195
	Timber	55	55	55
Estimated Temporary Piles (Each)	18" Steel Pile	150	150	150
Steel Piles - Fender and Platform Support (Each)	30" Steel; In front of bulkhead	40	40	40
Miscellaneous Support Piles (Each)	30" Steel; Within dock	30	30	30
Crane Rail Support Piles (Each)	30" Steel; Within dock	125	125	150
Proposed Sheet Piles (Each)	PS31 Sheet Pile; Dock face	1,400	1,700	1,800

The existing structure will be demolished by removing the concrete deck, steel superstructure, and attached appurtenances and structures and then extracting the existing steel support piles with a vibratory hammer. Sheet pile will also be installed with a vibratory hammer. Pile driving may occur from shore or from a stationary barge platform, depending on the Contractor's selected methods. After cells are completely enclosed, they will be incrementally filled with clean material using bulldozers and wheel loaders. Fill will be placed primarily from shore, but some may be placed from the barge if needed. Fill will be compacted using vibratory compaction methods, described below. After all the sheet piles are installed and the cells are filled and compacted, fender piles, crane rail piles, mooring cleats, concrete surfacing, and other appurtenances will be installed.

As described, the project requires the removal and installation of various types and sizes of piles with the use of a vibratory hammer and impact hammer. These activities have the potential to result in Level B harassment (behavioral disruption) only, as a monitoring plan will be implemented to

reduce the potential for exposure to Level A harassment (harassment resulting in injury). The rest of the in-water components of the project are provided here for completeness. Note that many of the support piles will be installed to an elevation below MHW or HTL; however, they will be installed within the enclosed fill of the sheet pile dock rather than in the water.

Utilities will be installed during Phase II, and include addition/extension of water, sewer, fuel, electrical, and storm drain. Authorization to construct the sewer and storm drain extension, as well as a letter of non-objection for the storm drain, will be obtained from the State of Alaska Department of Environmental Conservation (ADEC).

Each element is further described below.

Demolition of Existing Infrastructure - Demolition of the existing dock and removal of any existing riprap or obstructions will be performed with track excavators, loaders, cranes, barges, cutting equipment, a vibratory hammer (for pile extraction), and labor forces. The existing dock (consisting of steel support piles, steel superstructure, and concrete deck) will be completely removed for construction of the new dock. Vibratory pile removal will generally consist of clamping the vibratory hammer to the pile and vibrating the hammer while extracting to a point where the pile is temporarily secured and removal can be completed with crane line rigging under tension. The pile is then completely removed from the water by hoisting with crane line rigging and placing on the ground or deck of the barge.

The contractor will be required to dispose of (or salvage) demolished items in accordance with all federal, state, and local regulations. Dewatering will not be required, as all extraction will take place from the existing dock, from shore, and/or from a work barge.

Quarry Development - Concurrent with dock construction, a material source will be developed in the hillside adjacent to the UMC facility. The quarry will provide fill material for the dock and future projects. Material will be extracted from the quarry in a configuration that provides additional upland space for port operations. Flat uplands area will be used for COU port offices after the quarry is completed. The quarry will be developed through blasting benches in the rock face, with each bench approximately 25 feet high and the total height approximately 125 feet.

Temporary Support Piles - Temporary support piles for pile driving template structures will be installed to aid with construction and will be removed after the permanent sheet piles or support piles have been installed. Figure 3 shows temporary support piles and templates being used during pile installation. Temporary support piles will likely be steel H-piles (18-inch or smaller) or steel round piles (18-inch diameter or smaller). It is estimated that up to ten (10) temporary support piles will be used per cell during construction of the sheet pile structure. Installation methods for the temporary support piles will be similar to the fender support piles (described below).

Sheet Pile Installation - The new sheet pile bulkhead dock consists of twenty-two (22) OCSP cells. The sheet pile structures will be installed utilizing a crane and vibratory hammer. It is anticipated that the largest size vibratory hammer used for the project will be an APE 200-6 (eccentric moment of 6,600 inch-pounds) or comparable vibratory hammer from another manufacturer. After all the piles for a sheet pile cell have been installed, clean rock fill will be placed within the cell. This process will continue sequentially until all of the sheet pile cells are installed and backfilled.

Dock Fill Placement - Fill will be transported from the adjacent quarry to the project site using loaders, dump trucks, and dozers and may be temporarily stockpiled within the project footprint as

needed. It will be placed within the cells from the shore (or occasionally a barge) using the same equipment and will be finished using roller compactors, graders, or vibracompaction. Vibracompaction would be achieved through the repeated insertion and removal through vibratory hammering of an H-pile probe, causing fill materials to settle into place.

Fender and Platform Support Piles - Fender support piles will be installed adjacent to (and offshore of) the sheet pile cells and cut to elevation. The fender piles will first be driven with a vibratory hammer and, if capacity/embedment is not achieved, finally driven with an impact hammer until proper embedment and capacity is reached (likely 20-foot embedment). Pre-assembled fender systems (energy absorbers, sleeve piles, steel framing, and fender panels) will be lifted and installed onto fender support piles via crane.

In addition to the fender supports, miscellaneous support piles needed to support the suspended concrete platform at the transitions between Position II/III and IV/V will be installed and cut to elevation. Installation methods for the miscellaneous support piles will be similar to the fender support piles. Approximately forty (40) 30-inch steel piles will be driven for the fenders and transition platform.

Miscellaneous Support Piles - Support piles for upland utilities and other structures will be driven after sheet pile cells are completed. Though the piles will be driven beyond the current MHW line, the cells will be filled and compacted at the time of placement, making this upland pile driving. Approximately thirty (30) steel support piles are needed for dock infrastructure.

Crane Rail Support Piles - Approximately one hundred fifty (150) steel support piles will be driven to support the weight of a new crane rail and dock crane. Pile driving will be performed primarily within the completely filled and compacted sheet pile cells. A few of the support piles may be driven in the water at the transition areas.

Dock Surfacing and Other Concrete Elements - The new dock uplands area will be surfaced with concrete pavement. The crane rail beam and utility vaults will be constructed from cast-in-place concrete. The surfacing and structures will be installed using forms and reinforcement steel. This work will take place at or near the surface of the dock and will be above water.

Utilities - Temporary utilities will be installed to provide functional dock capability for the 2017/2018 season. Typical utility installation equipment such as track excavators, wheel loaders, and compaction equipment will be used. Permanent electrical, water, and storm drainage utilities will be installed during Phase 2 to provide full dock capability. Installation methods will require equipment similar to that used to install the temporary utilities. All storm water (and any other wastewater) from the dock will be processed through the COU stormwater system and necessary separator devices.

Details of all planned construction work can be found in section 1 of COU's application and in the *Federal Register* notice of the proposed Authorization (81 FR 78969, November 10, 2016; pages 78971-78973).

2.3 DESCRIPTION OF ALTERNATIVES

2.3.1 ALTERNATIVE 1 – ISSUANCE OF AN AUTHORIZATION WITH MITIGATION MEASURES

The Proposed Action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an Authorization (valid from March 2017 through February 2018) to the COU allowing the incidental take, by Level B harassment, of Steller sea lions, harbor seals, killer whales, and humpback whales subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization.

2.3.1.1 PROPOSED MITIGATION MEASURES

As described in Section 1.2.1, NMFS must prescribe the means of effecting the least practicable adverse impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider the COU's proposed mitigation measures, as well as other potential measures. NMFS' evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by NMFS beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

To reduce the potential for disturbance from acoustic stimuli associated with the proposed construction activities, the COU has agreed to implement monitoring and mitigation measures for marine mammals. These measures are described below:

- Establishment of Level A and Level B harassment zones: The COU has established zones to delineate areas in which marine mammals would experience Level A or Level B harassment if they were exposed to underwater sound from construction activity (Tables 4 and 5). These zones are based on the modeled distances from the pile being driven/removed to the isopleth that coincides with the minimum thresholds for Level A and Level B harassment, based on NMFS's acoustic criteria (Tables 6 and 7). Marine mammal monitoring (described below) will occur in these zones to prevent Level A take of any marine mammals; to prevent Level A and Level B take of any marine

mammals other than those authorized; and to observe and record any Level B take of Steller sea lions, harbor seals, killer whales, and humpback whales that occurs as a result of exposure to construction noise.

- **Soft Start:** The use of a “soft-start” procedure is believed to provide additional protection to marine mammals by providing a warning and an opportunity to leave the area prior to the hammer operating at full capacity. Soft start procedures will be used prior to pile removal, pile installation, and in-water fill placement to allow marine mammals to leave the area prior to exposure to maximum noise levels. For vibratory hammers, the soft start technique will initiate noise from the hammer for short periods at a reduced energy level, followed by a brief waiting period and repeating the procedure two additional times. For impact hammers, the soft start technique will initiate several strikes at a reduced energy level, followed by a brief waiting period. This procedure would also be repeated two additional times. Equipment used for fill placement will be idled near the waterside edge of the fill area for 15 minutes prior to performing in-water fill placement.
- **Shutdown Measures:** The COU will implement shutdown measures if a Steller sea lion harbor seal, killer whale, or humpback whale is sighted in, or appears likely to enter, the Level A shutdown zone for low-frequency cetaceans, mid-frequency cetaceans, phocid pinnipeds, or otariid pinnipeds (Table 5), or if any marine mammal other than a Steller sea lion, harbor seal, killer whale, or humpback whale appears likely to enter the Level B zone. All pile installation/removal activities and other in-water construction activities would be immediately halted. In the event of a shutdown of pile installation or removal operations, construction activities may resume only when: the marine mammal that was within, or appeared likely to enter, the Level A zone has been visually confirmed beyond the Level A zone, or 15 minutes (in the case of pinnipeds) or 30 minutes (in the case of a cetacean) have passed without re-detection of the animal.
- **In-water or Over-water Construction Activities:** During in-water or over-water construction activities having the potential to affect marine mammals, but not involving a pile driver, a shutdown zone of 10 meters (m) will be monitored to ensure that marine mammals are not endangered by physical interaction with construction equipment. These activities could include, but are not limited to, the positioning of the pile on the substrate via a crane (“stabbing” the pile) or the removal of the pile from the water column/substrate via a crane (“deadpull”), or the slinging of construction materials via crane.
- **Sound attenuation devices** (air bubble curtains, pile caps, etc.) shall be used during all impact pile driving operations.
- **Vessel Interactions:** To minimize impacts from vessels interactions with marine mammals, the crews aboard project vessels will follow NMFS’s marine mammal viewing guidelines and regulations as practicable.
(<https://alaskafisheries.noaa.gov/protectedresources/mmv/guide.htm>).
- **Time Restriction:** If the exclusion zone is obscured by fog or poor lighting conditions, pile driving shall not be initiated until the exclusion zone is clearly visible. Should such conditions arise while impact driving is underway, the activity would be halted.

Table 4: Modeled distances to the NMFS Level B harassment thresholds (isopleths) and actual monitoring zones during pile installation and removal.

Threshold	Distance (m) *	Monitoring Zone (m)
Impact driving, disturbance (160 dB)	1000	1000
Vibratory removal, disturbance (120 dB)	11,659** (steel)	3,300 (steel)
	1585 (timber)	1600 (timber)

*Distances shown are modeled maximum distances and do not account for landmasses which are expected to reduce the actual distances to sound thresholds.

**This is the maximum distance modeled. See Section 5 of the application for the modeled distances for each pile driving activity type.

Table 5: Pile driving activities and calculated distances to Level A harassment isopleths (onset PTS threshold using NMFS' acoustic guidance [NMFS, 2016a]) and Level A shutdown (exclusion) zones.

Source	Estimated Duration				Level A Harassment Zone (m)/shutdown zone (m)			
	Number of Piles	Piles Driven per Day	Hours per Day	Days of Effort	LF Cetaceans	MF Cetaceans	PW Pinnipeds	OW Pinnipeds
Vibratory Installation Sheet	1,700	15	0.5	95	4.1/10	0.4/10	2.5/10	0.2/10
Vibratory Installation 18"	150	10	1.25	15	9.2/10	0.8/10	5.6/10	0.4/10
Vibratory Installation 30"	40	5	1	8	14.7/15	1.3/10	8.9/10	0.6/10
Vibratory Removal Steel 18"	195	10	1.25	35	9.2/10	0.8/10	5.6/10	0.4/10
Vibratory Removal Steel 18"	150	10	1.25	35	9.2/10	0.8/10	5.6/10	0.4/10
Vibratory Removal Timber	55	10	1.25	5.5	2.3/10	0.2/10	1.4/10	0.1/10
	Number of Piles	Piles Driven per Day	Strikes per Pile	Days of Effort	LF Cetaceans	MF Cetaceans	PW Pinnipeds	OW Pinnipeds
Impact Installation 30" (SEL Calc)	40	5	200	8	397.6/400	14.1/15	212.8/215	15.5/15
		4		10	342.6/340	12.2/15	183.3/185	13.3/15
		3		14	282.8/280	10.1/10	151.4/150	11/10
		2		20	215.8/215	7.7/10	115.5/115	8.4/10
		1		40	136/135	4.8/10	72.8/75	5.3/10

Table 6: Current NMFS acoustic exposure criteria for Level B harassment.

Criterion	Definition	Threshold
Level B harassment (underwater)	Behavioral disruption	160 dB re: 1 μ Pa (impulsive source*) / 120 dB re: 1 μ Pa (continuous source*) (rms)
Level B harassment (airborne)**	Behavioral disruption	90 dB re: 20 μ Pa (harbor seals) / 100 dB re: 20 μ Pa (other pinnipeds) (unweighted)

* Impact pile driving produces impulsive noise; vibratory pile driving produces non-pulsed (continuous) noise.

** NMFS has not established any formal criteria for harassment resulting from exposure to airborne sound. However, these thresholds represent the best available information regarding the effects of pinniped exposure to such sound and NMFS' practice is to associate exposure at these levels with Level B harassment.

Table 7: Current NMFS PTS onset (Level A harassment) acoustic thresholds.

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> L _{pk,flat} : 219 dB L _{E,LF,24h} : 183 dB	<i>Cell 2</i> L _{E,LF,24h} : 199 dB
	<i>Cell 3</i> L _{pk,flat} : 230 dB L _{E,MF,24h} : 185 dB	<i>Cell 4</i> L _{E,MF,24h} : 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> L _{pk,flat} : 202 dB L _{E,HF,24h} : 155 dB	<i>Cell 6</i> L _{E,HF,24h} : 173 dB
	<i>Cell 7</i> L _{pk,flat} : 218 dB L _{E,PW,24h} : 185 dB	<i>Cell 8</i> L _{E,PW,24h} : 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> L _{pk,flat} : 232 dB L _{E,OW,24h} : 203 dB	<i>Cell 10</i> L _{E,OW,24h} : 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μ Pa, and cumulative sound exposure level (L_E) has a reference value of 1 μ Pa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

2.3.1.2 PROPOSED MONITORING MEASURES

The COU proposes to conduct marine mammal monitoring during the project, in order to implement the mitigation measures described above that require real-time monitoring, and to satisfy the monitoring requirements of the Authorization. The Authorization, if issued, would require the COU to monitor the area for marine mammals during all in-water construction activities, ensure the zones were cleared of marine mammals as necessary, and implement shutdown procedures, as described below:

- A minimum of two land-based trained observers would be located on site before, during, and after in-water construction activity at sites appropriate for monitoring marine mammals within and approaching the Level A and Level B harassment zones. During observation periods, observers would continuously scan the area for marine mammals using binoculars and the naked eye.
- Observers would “clear” the zones by monitoring the Level A and Level B harassment zones for 30 minutes prior to the start of pile driving/removal or other in-water construction activities to ensure no marine mammals within NMFS’s jurisdiction are present within or approaching the Level A harassment zone, and that no marine mammals within NMFS’s jurisdiction other than Steller sea lions, harbor seals, killer whales, or humpback whales are present within the Level B harassment zone.
- Observers would notify the construction contractor if a Steller sea lion, harbor seal, killer whale, or humpback whale is sighted in, or appears likely to enter, the Level A zone, or if any marine mammal other than any of those authorized appears likely to enter the Level B zone; either of these scenarios would trigger immediate shutdown of all construction activity.
- Both observers must be able to see the entirety of the Level A and Level B harassment zones or a third observer shall be added.
- Observers would record observations on marine mammals within the vicinity of the proposed construction activities. These monitoring notes would provide dates, locations, species, behavioral state, numbers of animals and any disturbances or behavioral responses associated with construction activities.

2.3.1.3 PROPOSED REPORTING MEASURES

The COU would submit a draft report to NMFS within 90 days after completing the proposed construction activities. A final comprehensive report will be prepared and submitted to NMFS within 30 calendar days following resolution of comments on the draft report from NMFS. The final report would describe the activities conducted and observations of marine mammals near the proposed project. The final report would provide:

- (1) A description of dates, times, and weather conditions during all construction and marine mammal monitoring activities;
- (2) A description of the species, number, location, and behavior of all marine mammals observed throughout all construction activities;
- (3) A description of all pile driving activity (pile locations, pile size and type) and construction activity not involving pile driving (location, type of activity, onset and completion times);
- (4) A description of any times when pile driving or other in-water construction was delayed due to presence of marine mammals within shutdown zones.

- (5) A description of the implementation and effectiveness of the monitoring and mitigation measures of the Authorization and full documentation of methods, results, and interpretation pertaining to all monitoring.
- (6) An estimate of the number (by species) of marine mammals that are known to have been exposed to acoustic stimuli associated with construction activities;

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the Authorization (if issued), such as an injury (Level A harassment), serious injury, or mortality (*e.g.*, vessel-strike, stampede, etc.), the COU would immediately cease the specified activities and immediately report the incident to the Division Chief, Permits and Conservation Division, Office of Protected Resources and the Alaska Regional Stranding Coordinator. The COU may not resume activities until NMFS is able to review the circumstances of the prohibited take. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Description and location of the incident (including water depth, if applicable);
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

In the event that the COU discovers an injured or dead marine mammal, and the cause of the injury or death is unknown and the death is relatively recent (*i.e.*, in less than a moderate state of decomposition), the COU would immediately report the incident to the Division Chief, Permits and Conservation Division, Office of Protected Resources and the Alaska Regional Stranding Coordinator. The report must include the same information identified in the paragraph above this section. Activities may continue while we review the circumstances of the incident.

In the event that the COU discovers an injured or dead marine mammal, and it is determined the death is not associated with or related to the authorized activities (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the COU would report the incident to the incident to the Division Chief, Permits and Conservation Division, Office of Protected Resources and the Alaska Regional Stranding Coordinator within 24 hours of the discovery. The COU would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us. NMFS would allow the COU to continue their activities.

TAKE ESTIMATES

The COU has requested take by Level B harassment as a result of underwater sound produced through pile driving associated with the proposed dock construction project. We expect that the proposed project would cause short-term behavioral disturbance and/or displacement of marine mammals. NMFS does not propose to authorize any injury, serious injury, or mortality as a result of the proposed activity; we expect all potential takes to fall under the category of Level B harassment only.

Based on best available information, NMFS estimates that the construction activities could

potentially affect up to 926 Steller sea lions, 470 harbor seals, 88 killer whales, and 176 humpback whales by Level B behavioral harassment over the course of the proposed authorization (Table 8). The estimates of exposure represent small numbers relative to the relevant stocks or populations (Table 8). Furthermore, the total number of takes requested would only affect the localized populations. It should also be noted that the proposed total number of takes is expected to include multiple incidences of harassment of the same individual(s) both within and among days, thus the number of individual animals that will be exposed to Level B harassment is expected to be significantly less than the proposed take estimates.

This Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA—issuance of an Authorization, along with required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

Table 8: Number of potential marine mammal incidental takes proposed for authorization, and percentage of stock abundance, as a result of the proposed project.

Species	Underwater ¹		Percentage of stock abundance
	Level A	Level B	
Humpback whale	0	176	1.6%
Killer whale	0	88	3.0%
Steller sea lion	0	926	1.9%
Harbor seal	0	470	8.1%

¹ We assume, for reasons described earlier, that no takes would occur as a result of airborne noise.

2.3.2 ALTERNATIVE 2 – NO ACTION ALTERNATIVE

For NMFS, denial of an MMPA authorization constitutes the NMFS No Action Alternative, which is consistent with our statutory obligation under the MMPA to grant or deny permit applications and to prescribe mitigation, monitoring and reporting with any authorizations. Under the NMFS No Action Alternative, there are two potential outcome scenarios. One is that the dock construction activities using pile driving and removal occur in the absence of an MMPA authorization. In this that case, (1) the COU would be in violation of the MMPA if takes occur; (2) mitigation, monitoring and reporting would not be prescribed by NMFS; and 3) mitigation measures might not be performed voluntarily by the applicant. Another outcome scenario is the COU could choose would not to proceed with their proposed activities.

By undertaking prescribing measures to protect minimize impacts on marine mammals species or stocks from incidental take through the authorization program, we can potentially lessen the impacts of these activities on the marine environment. While NMFS does not authorize the construction activities, NMFS does authorize the unintentional, incidental unintentional take of marine mammals (under its jurisdiction) in connection with these activities and prescribes, where applicable, the methods of taking and other means of effecting the least practicable impact on the species and stocks and their habitats. Although the No Action Alternative would not meet the purpose and need to allow incidental takes of marine mammals under certain conditions, the CEQ’s regulations require consideration and analysis of a No Action

2.3.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

NMFS considered whether other alternatives could meet the purpose and need and support the COU's proposed construction project. An alternative that would allow for the issuance of an Authorization with no required mitigation or monitoring was considered but eliminated from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document.

CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter describes existing conditions in the proposed project area. Descriptions of the physical and biological environment of the action area are contained in the documents incorporated by reference (see section 1.3.1) and summarized here.

3.1 PHYSICAL ENVIRONMENT

NMFS' proposed action and alternatives relate only to the proposed issuance of our Authorization of incidental take of marine mammals and not to the physical environment. Therefore, certain aspects of the physical environment are not relevant to our proposed action (see section 1.3.2 - Scope of Environmental Analysis). Because of the requirements of NAO 216-6, we briefly summarize the physical components of the environment here.

In summary, Dutch Harbor is a small harbor nestled in the southeast of Amaknak Island, a small islet in the Aleutian Islands archipelago in the Gulf of Alaska. Amaknak Island is approximately 4 miles long and 1 mile wide at its widest point, and is located in Unalaska Bay, a large bay on the northern side of Unalaska Island that opens into the Bering Sea. Unalaska Bay and the contiguous marine waters are at latitude 54°00' N and longitude 166°30'W. Amaknak Island is connected via a bridge to the much larger Unalaska Island, located west of Akutan Pass in the Aleutian Island chain. The Gulf of Alaska generally includes all waters within the Exclusive Economic Zone along the southeastern, southcentral, and southwestern coasts of Alaska from Dixon Entrance to Unimak Pass (NMFS, 2007). Numerous troughs and shallow banks characterize the topography of the western Gulf of Alaska. The Aleutian shelf area, as defined by the 200-m isobath, is narrower than the eastern Bering Sea shelf and drops abruptly to depths of 5000-6000 m in the Aleutian Trench, which parallels the shelf edge (NMFS, 2007). The Unalaska and Amaknak Island coasts are, with few exceptions, steep and rocky, and most drop sharply into deep water.

3.1.1 MARINE MAMMAL HABITAT

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the notice of the proposed Authorization (81 FR 78969, November 10, 2016). We incorporate that description by reference here. In summary, marine mammals haul out on the shorelines or in intertidal areas of Unalaska Bay, but are not known to haul out within Dutch Harbor.

The COU's proposed construction activities occur within critical habitat for three major Steller sea lion haul-outs and one rookery. The three haul-outs (Old Man Rocks, Unalaska/Cape Sedanka, and Akutan/Reef-Lava) are located between approximately 15 and 19 nautical miles from the project area. The closest rookery is Akutan/Cape Morgan, which is about 19 nautical miles from

the project area.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 MARINE MAMMALS

We provide information on the occurrence of marine mammals with possible or confirmed occurrence in the project area in section 1.1.2 of this EA. The western DPS of Steller sea lions, harbor seals (Aleutian Islands stock), killer whales (Eastern North Pacific, Alaska Resident stock; Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock), and humpback whales (Central North Pacific and Western North Pacific stocks) are the only marine mammals most likely to be present in the action area.

The *Federal Register* notice of the proposed Authorization (81 FR 78969, November 10, 2016) provided information on the stock, regulatory status, abundance, occurrence, seasonality, and hearing ability of the marine mammals in the action area. The COU's application (COU 2016) also provided information on the life history and population size information for marine mammals within the action area. We incorporate those descriptions by reference and briefly summarize the information here.

Western DPS of Steller sea lions: Steller sea lions are distributed mainly around the coasts to the outer continental shelf along the North Pacific rim from northern Hokkaido, Japan through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, southern coast of Alaska and south to California (Loughlin *et al.*, 1984). Based on distribution, population response, and phenotypic and genotypic data, two separate stocks of Steller sea lions are recognized within U. S. waters, with the population divided into western and eastern distinct population segments (DPS) at 144°W (Cape Suckling, Alaska) (Loughlin, 1997). The western DPS includes Steller sea lions that reside in the central and western Gulf of Alaska, Aleutian Islands, as well as those that inhabit the coastal waters and breed in Asia (e.g., Japan and Russia). Only the western DPS is considered in this proposed authorization because the eastern DPS occurs outside the geographic area under consideration.

The species as a whole was ESA-listed as threatened in 1990 (55 FR 49204) because of significant declines in the population which may have been caused by nutritional stress due to competition with commercial fisheries, environmental change, disease, killer whale predation, incidental take, and shooting (illegal and legal). In 1997, the species was divided into two separate DPSs, as described above, and the western DPS was reclassified as endangered under the ESA because of its continued decline since the initial listing in 1990 (62 FR 24345).

The most recent comprehensive estimate of the abundance of the western DPS in Alaska is 49,497 individuals (both pups and non-pups) (Muto *et al.*, 2016). This figure represents a marked decline from abundance estimates in the 1950s (n = 140,000) and 1970s (n = 110,000). Pup counts in the Western DPS in Alaska overall increased at 1.8% annually between 2000 and 2014; non-up counts increased at 2.2% annually over the same period (Fritz *et al.*, 2015). However, survey data collected since 2000 indicate that the population decline continues in the central and western Aleutian Islands while populations east of Samalga Pass (approx. 170° W) have increased (Allen and Angliss 2014). Survival rates east of Samalga Pass have rebounded to nearly the same levels estimated for the 1970s, prior to the decline in abundance. In addition, population models indicate that natality among the increasing population east of Samalga Pass in the period 2000–2012 may not be significantly different from rates estimated for the 1970s. The proposed project location in Dutch Harbor is approximately 220 km east of Samalga Pass. Based on data from NOAA National

Marine Mammal Laboratory (NMML) breeding season surveys, the population of Steller sea lions in the eastern Aleutian Islands (from Unimak Island through Umnak Island, 163-169°W) has been increasing at 2-3% per year since 2000.

Steller sea lions are the most abundant marine mammals in the project area. Data from the NMML surveys of haulouts on Unalaska Island suggest the Steller sea lion haulouts nearest to the project location are at Priest Rock (approximately 19 km from the project site), Cape Wislow (approximately 19 km from the project site) and Bishop Point (approximately 27 km from the project site). Survey data from Bishop Point shows a mean of 193 individual sea lions observed over 36 separate surveys from 1960 to 2014; Priest Rock had a mean of 12 individuals observed since 1994, with higher totals recorded recently (107 individuals counted in 2014); and Cape Wislow had 60 individuals observed in 1989, but no sea lions observed at the site during the 20 surveys that have occurred there from 1990 to 2014.

Steller sea lions are not known to haul out in the project area, though individuals are observed with regularity in the water within Dutch Harbor. The number of sea lions in the immediate project area varies depending on the season, with local abundance in the breeding season generally higher overall than in the non-breeding season, and the on the presence of fishing vessels in the harbor. Sea lions are likely drawn to the project location by the abundant and predictable sources of food provided by commercial fishing vessels and fish processing facilities.

Aleutian Islands stock of harbor seals: Harbor seals range from Baja California north along the west coasts of Washington, Oregon, California, British Columbia, and Southeast Alaska; west through the Gulf of Alaska, Prince William Sound, and the Aleutian Islands; and north in the Bering Sea to Cape Newenham and the Pribilof Islands. They haul out on rocks, reefs, beaches, and drifting glacial ice, and feed in marine, estuarine, and occasionally fresh waters. They generally are non-migratory, with local movements associated with such factors as tides, weather, season, food availability, and reproduction (Scheffer and Slipp, 1944; Fisher, 1952; Bigg, 1969, 1981; Hastings *et al.*, 2004).

In 2010, harbor seals in Alaska were partitioned into 12 separate stocks based largely on genetic structure (Allen and Angliss, 2012). Only the Aleutian Islands stock is considered here because other stocks occur outside the geographic area under consideration. Distribution of the Aleutian Islands stock extends from Ugamak Island (southwest of Unimak Island in the Eastern Aleutians) west to Attu Island (the westernmost Aleutian Island in the U.S.). The abundance estimate for the Aleutian Islands stock is 5,772 (Muto *et al.*, 2016). The current statewide abundance estimate for Alaskan harbor seals is 152,602 based on aerial survey data collected during 1998-2007 (Allen and Angliss, 2012). The current population trend in the Aleutian Islands is unknown. Additionally, the haul-out patterns of harbor seals in the Aleutian Islands have not been studied, and there is no stock specific estimate of a survey correction factor.

Small *et al.* (2008) compared harbor seal counts from 106 Aleutian islands surveyed in 1977–1982 (8,601 seals) with counts from the same islands during a 1999 aerial survey (2,859 seals). Counts decreased at a majority of the islands surveyed. A 45% decline was estimated in the Eastern Aleutians (n = 35 islands), with overall estimates for the entire Aleutian Islands chain showing a 67% decline during the approximate 20-year period. Seal counts decreased at the majority of islands in each region, the number of islands with over 100 seals decreased ~70%, and the number of islands with no seals counted increased approximately 80%, indicating that harbor seal abundance throughout the Aleutian Islands was substantially lower in the late 1990s than in the 1970s and 1980s (Small *et al.*, 2008).

Harbor seals are only occasionally seen in Dutch Harbor. No pupping or haulout sites exist within the project area. The closest known harbor seal haulout is located approximately 3 km away from the proposed construction site on the northern tip of Hog Island in Unalaska Bay; NMML survey data shows an average of approximately 11 seals observed at the site over the course of four surveys from 2008-2010. Surveys were conducted only in late July and August, thus seasonal information on abundance or distribution is not available. NMML survey data suggest there are at least six other harbor seal haulouts in and around Unalaska Bay that are further from the project site; the maximum number of seals observed at any of these haulouts has not exceeded 39 individuals at any one time.

Killer whales: Killer whales, part of the Delphinidae family, are part of a large group of toothed whales (also known as Odontocetes). According to Leatherwood and Dahlheim, killer whales are the most widely distributed marine mammal and can be found in all oceans (as cited in Allen and Angliss, 2014). Killer whales show signs of sexual dimorphism, with males reaching up to 32 feet and weighing up to 10,000 kg and females reaching up to 28 feet and weighing up to 7,500 kg. Three ecotypes of killer whales occur within the North Pacific Ocean – resident, transient (also known as Bigg’s), and offshore. Two stocks of killer whale species occur within the project area – the Eastern North Pacific Alaska Resident Stock and the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock. Neither stock is listed as depleted under the MMPA or as threatened or endangered under the ESA.

Killer whales have no natural predators and are known as the top carnivores currently living on the Earth (Pitman, 2011). Resident killer whales typically eat fish, particularly salmon and Atka mackerel (Parsons *et al.*, 2013), and have a rounded dorsal fin. Transient killer whales feed on other marine mammals including Steller sea lions, harbor seals, and various species of pinnipeds and cetaceans. Transient killer whales near Unimak Island have been observed foraging on migrating gray whales, while resident killer whales primarily feed on salmon and other fish (Barrett-Lennard *et al.*, 2011). Transients typically have smaller, less matrilineal groupings than resident killer whales. They are also more likely to rely on stealth, making less frequent and less conspicuous calls and skirting “along shorelines and around headlands” in order to hunt their prey in highly coordinated attacks (Barrett-Lennard *et al.*, 2011). Residents often travel in much larger and closer groups with which they share any fish they catch.

Little is known about killer whales that inhabit waters near Unalaska (Parsons *et al.*, 2013). While it is likely that killer whales may appear in Dutch Harbor, given their known range and the availability of food, 2015-2016 surveys contracted by the COU (2016) saw only a small number (2) of marine mammals that were suspected to be killer whales (average monthly observation rate for these unidentified whales = 0.02). There are differences in the physical appearance of transient and resident killer whales; however, in the surveys no distinction was noted. Killer whale density data for the project location is not available. We assume, based on the best available information, that killer whales will be encountered in low numbers throughout the duration of the project.

Humpback whales: Humpback whales are a large baleen whale (also known as Mysticetes). They are found in all oceans, in both warm and cold waters (50 CFR 22304). Humpback whales are known for their long pectoral fins, which are white on their underside and dark in color (similar to their bodies) on the top. The distinct coloring on the flukes, or tails, of humpback whales is used for identification purposes. Adult male humpback whales are smaller than adult females, with both reaching lengths up to 60 feet and weighing up to 36,000 kg (approximately 40 tons). Newborns weigh about 900 kg and are up to 15 feet long.

Humpback whales generally summer in Alaska, feeding in coastal and inland waters (Allen and Angliss, 2013) and preparing for their winter migration to warmer, tropical waters where they “congregate and engage in mating activities” (NMFS, 2015a). Two stocks of humpback whales occur within the project area: the Western North Pacific stock and the Central North Pacific stock. The Western North Pacific stock migrates from waters near Japan. The Central North Pacific stock winters in waters around the Hawaiian Islands (NMFS, 2015a). The migration route of humpback whales within the Central North Pacific stock is approximately 3,000 miles (50 CFR 22304). Humpback whales are occasionally found inside of Dutch Harbor and in nearby Iliuliuk Bay during the summer months, with larger numbers occurring along the north side of Unalaska Island (Allen and Angliss, 2013). Humpback whales use a unique form of corralling their prey called bubble netting in which they gather in groups and use bubbles to force their prey to the surface of the water (NMFS, 2015a).

There are three DPSs that may occur in the action area: the Mexico DPS, the Hawaii DPS, and the Western North Pacific (WNP) DPS. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and continued to list humpbacks as endangered. NMFS evaluated the status of the population, and on September 8, 2016, NMFS divided the globally listed humpback whale into 14 distinct population segment (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259). The remaining nine DPSs were not listed because it was determined that they are not threatened or endangered under the ESA. The Hawaii DPS of humpback whales was not listed under the ESA in NMFS final rule, while the Mexico DPS was listed as threatened and the WNP DPS was listed as Endangered (81 FR 62259).

Humpback whales are rare in the project area. Humpback whale density data for the project location is not available. We assume, based on the best available information, that humpback whales will be encountered in low numbers throughout the duration of the project. We relied on the best available information to estimate take of humpback whales, which in this case was COU survey data collected from the 2015-2016 marine mammal surveys of Dutch Harbor as described above (COU, 2016). That survey data showed humpback whales are present in the harbor only occasionally (average monthly observation rate = 0.06).

Of the humpback whales found in Alaska, it is estimated that 89% are from the Hawaii DPS, 10.5% are from the Mexico DPS, and 0.5% are from the WNP DPS (Wade *et al.*, 2016).

3.1 SOCIAL AND ECONOMIC ENVIRONMENT

Potential impacts to the social and economic environment resulting from the UMC dock construction project would be limited to impacts on subsistence hunting as a result of harassment of marine mammals. Subsistence hunting and fishing is an important part of the history and culture of Unalaska Island. However, the number of Steller sea lions and harbor seals harvested in Unalaska decreased from 1994 through 2008; in 2008, the last year for which data is available, there were no Steller sea lions or harbor seals reported as harvested for subsistence use. Data on pinnipeds hunted for subsistence use in Unalaska has not been collected since 2008. For a summary of data on pinniped harvests in Unalaska from 1994-2008, see Section 8 of COU’s application. Subsistence hunting for humpback and killer whales does not occur in Unalaska. Aside from the apparently decreasing rate of subsistence hunting in Unalaska, Dutch Harbor is not likely to be used for subsistence hunting or fishing due to its industrial nature, with several dock facilities located along the shoreline of the harbor. In addition, the UMC dock construction project is likely to result only in short-term, temporary impacts to pinnipeds in the form of possible

behavior changes, and is not expected to result in the injury or death of any marine mammal. As such, the project is not likely to adversely impact the availability of any marine mammal species or stocks that may otherwise be used for subsistence purposes, and therefore is not expected to negatively impact the social and economic environment of Unalaska.

In order to meet the increasing needs of the international shipping industry and increase vessel berthing capacity, a substantial upgrade of aging UMC facilities is necessary. The proposed project will replace the existing pile supported docks located at UMC Dock Positions III and IV with a modern high-capacity sheet pile bulkhead dock that extends from the existing bulkhead dock at Position V to the U.S. Coast Guard (USCG) Dock. COU port operations sees numerous factory trawler offloads occurring at Dock Positions III and IV. These operations require more length at the face of the dock and greater uplands area than is available with the current infrastructure. The existing pile-supported docks are aging structures in shallower water that no longer meet the needs of the Port and require increasing levels of maintenance and monitoring costs. Both docks are also severely constrained by the limited uplands area available for offloading and loading operations. The new dock alignment will allow larger, deeper vessels as well as simultaneous use of the other UMC facilities. As such, the proposed dock construction would facilitate increased capacity and therefore has the potential to have a positive impact on the social and economic environment of Unalaska.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

This chapter of the EA includes a discussion of the impacts of the two alternatives on the human environment. The COU's application, our notice of a proposed Authorization, and other related environmental analyses identified previously, inform our analysis of the direct, indirect, and cumulative effects of our proposed issuance of an Authorization.

Under the MMPA, we have evaluated the potential impacts of the COU's proposed dock construction activities in order to determine whether to authorize incidental take of marine mammals. Under NEPA, we have determined that an EA is appropriate to evaluate the potential significance of environmental impacts resulting from the issuance of our Authorization.

4.1 EFFECTS OF ALTERNATIVE 1 – ISSUANCE OF AN AUTHORIZATION WITH MITIGATION MEASURES

Alternative 1 is the Preferred Alternative, where we would issue an Authorization to the COU allowing the take of small numbers of Steller sea lions, harbor seals, killer whales, and humpback whales by Level B harassment incidental to the proposed dock construction activities from March 2017 through February 2018, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the Authorization, if issued.

4.1.1 IMPACTS TO MARINE MAMMAL HABITAT

NMFS' proposed action, the Preferred Alternative, would have no additive or incremental effect on the physical environment, or on components of the biological environment that function as marine mammal habitat, beyond those resulting from the dock construction project. The proposed activity area is not located within a marine sanctuary or a National Park. The proposed activities would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitat. We do not anticipate that the project would physically alter the marine environment or negatively impact the physical environment or components of the biological environment that function as marine mammal habitat in the proposed action area. The MMPA

Authorization would not impact physical or biological habitat features, such as substrates and/or water quality or availability of marine mammal prey, as the Authorization allows only for the take of marine mammals by Level B harassment and includes mitigation measures to reduce impacts to marine mammals. Those mitigation measures will not have any effect on the physical environment and are used to minimize potential environmental effects from project activities under this alternative. The effects of the proposed project on marine mammal habitats are anticipated to be short-term and minor because they are associated with construction activities that would occur intermittently over a 12-month period.

Construction activities would likely have temporary impacts on habitat through increases in underwater and airborne sound from pile removal and installation. Displacement of marine mammals by noise would not be permanent and would not have long term effects. The proposed project is not anticipated to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations, because pile driving and other noise sources would be temporary and intermittent.

The proposed construction project location is within ESA-designated critical habitat for Steller sea lions, as there are three haulouts and one rookery within a 20 nm radius of the project site. However, project-related disturbances would not be detectable at these haulouts and rookeries, as the closest of these is located approximately 15 nm from the project site. The level of disturbance and habitat alteration in the project area would be insignificant and discountable, especially when considered in relation to the activity already taking place and apparent tolerance of sea lions and harbor seals in the project area. The proposed construction site is in a highly industrialized harbor with frequent vessel traffic; Steller sea lions are found frequently in the area, apparently drawn to the harbor by the presence of fishing boats and fish processing facilities. Steller sea lions and harbor seals do not haul out in the immediate area of the proposed construction project. More information on potential impacts to marine mammal habitat is contained in the COU's application and our proposed Authorization (81 FR 78969, November 10, 2016; pages 78978-78979), which are incorporated herein by reference.

4.1.2 IMPACTS TO MARINE MAMMALS

We expect that acoustic stimuli generated from the proposed construction activities have the potential to impact marine mammals in the project area by causing a short-term behavioral disturbance (Level B harassment), and comprises the only likely source of effects to marine mammals from the proposed project. Our notice of proposed Authorization (81 FR 78969, November 10, 2016) and the COU's application provide detailed descriptions of these potential effects of proposed project activities on marine mammals. That information is incorporated herein by reference and summarized below.

The level of impact on marine mammals from acoustic stimuli varies depending on the species, the distance between the marine mammal and the sound source, the intensity and duration of the source, and environmental conditions. Marine mammals exposed to high-intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak *et al.*, 1999; Schlundt *et al.*, 2000; Finneran *et al.*, 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.*, 2007). Since marine mammals depend on acoustic cues for vital biological functions, such as orientation, communication, finding prey, and avoiding predators, hearing impairment could result in the reduced ability of marine mammals to detect or

interpret important sounds. Repeated noise exposure that causes TTS could lead to PTS.

Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al.*, 2009). Masking is the obscuring of sounds of interest by other sounds, often at similar frequencies, and generally occurs when sounds in the environment are louder than, and of a similar frequency as, auditory signals an animal is trying to receive. Masking can interfere with detection of acoustic signals, such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired. Masking occurs at the frequency band that the animals utilize. Unlike TS, masking can potentially impact the species at community, population, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations.

Finally, in addition to TS and masking, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson *et al.*, 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities, such as socializing or feeding; visible startle response or aggressive behavior, such as tail/fluke slapping or jaw clapping; avoidance of areas where noise sources are located; and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries). The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. Behavioral responses to sound are highly variable and context-specific and reactions, if any, depend on species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day, and many other factors.

We expect that any disturbances to marine mammals that result from exposure to sound associated with the proposed construction project would result, at worst, in temporary modification in behaviors or temporary changes in animal distribution. At most, we interpret these effects on marine mammals as falling within the MMPA definition of Level B (behavioral) harassment. Although the consequences of behavioral modification have the potential to be biologically significant if the change affected growth, survival, or reproduction, this is not expected from the COU's proposed construction activities due to the relatively small scale, limited area, and brief duration of the project. We expect potential impacts to be minor because we do not anticipate measurable changes to the population or impacts to rookeries, mating grounds, and other areas of similar significance. We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We base our conclusion on the results of previous monitoring for similar activities.

Estimated Take of Marine Mammals by Level B Incidental Harassment: The COU has requested take by Level B harassment as a result of underwater sound produced by activities associated with the proposed construction project. We expect that the proposed project would cause short-term behavioral disturbance and/or displacement for Steller sea lions, harbor seals, killer whales, and humpback whales expected to be in the proposed project area.

Under the Preferred Alternative, we would authorize incidental take, by Level B harassment only, of up to 926 Steller sea lions, 470 harbor seals, 88 killer whales, and 176 humpback whales over the course of the proposed authorization. The estimates of exposure represent small numbers relative to the relevant stocks or populations (Table 8). Furthermore, the total number of takes

requested would only affect the localized populations of these stocks. It should also be noted that the proposed total number of takes is expected to include multiple incidences of harassment of the same individual(s) both within and among days, thus the number of individual animals that will be exposed to Level B harassment is expected to be significantly lower than the proposed take estimates shown in Table 8. Our proposed Authorization notice (81 FR 78969, November 10, 2016; pages 78987-78988) and the COU's application contain complete descriptions of how these take estimates were derived.

We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We do not expect the construction activities to impact rates of recruitment or survival for any affected species or stock. Further, the activities would not take place in areas of significance for marine mammal feeding, breeding, or calving. We base our consideration on the results of previous monitoring reports from similar activities authorized in Alaska and in the Pacific Northwest United States.

Injury: The COU did not request authorization to take marine mammals by injury (Level A harassment), serious injury, or mortality. Our preliminary analyses presented in the *Federal Register* notice of the proposed Authorization (81 FR 78969, November 10, 2016), and previous monitoring reports from similar actions, show that there is no evidence that the planned activities could result in injury, serious injury, or mortality within the action area. Further, under the Preferred Alternative, the required mitigation and monitoring measures would minimize any potential risk of injury, serious injury, or mortality for marine mammals.

4.1.3 IMPACTS TO SUBSISTENCE USES

Noise from pile removal and installation associated with the pier construction activities may temporarily displace marine mammals from the area but animals are anticipated to return to the area following the cessation of pile removal and installation. Any displacement of sea lions or harbor seals from Dutch Harbor associated with the proposed construction project is expected to be temporary and would not result in displacement of sea lions or harbor seals from traditional hunting areas. Further, the project location, Dutch Harbor is not used as a subsistence harvest area as it is a highly industrialized harbor. Subsistence hunting for humpback and killer whales does not occur in Unalaska. Therefore, the issuance of an Authorization for the proposed construction activities will not have an unmitigable adverse impact on subsistence uses and the availability of subsistence resources will not change as a result from proposed construction activities.

4.2 EFFECTS OF ALTERNATIVE 2—NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an Authorization to the COU. As a result, the COU would not receive an exemption from the MMPA prohibitions against the take of marine mammals.

4.2.1 IMPACTS TO MARINE MAMMAL HABITAT

Under the No Action Alternative, no effects on the physical environment or components of the biological environment that function as marine mammal habitat would result from the COU's planned pile removal and installation activities, which we evaluated in the referenced documents. Even without mitigation measures, impacts to marine mammal habitat (including prey species) would be minimal and temporary because (1) the area of potential effect is limited in both space and time (e.g., short daily duration of sound associated with individual pile driving events); and (2)

there are no major haulout sites in the immediate vicinity or ocean bottom structure of significant biological importance to marine mammals in the project area. Impacts to marine mammal habitat would occur from noise and minor impacts to the immediate substrate during installation and removal of piles during the project, or from temporary avoidance by prey species in the immediate area. This alternative would result in similar effects as Alternative 1 on the physical environment and components of the biological environment that function as marine mammal habitat.

4.2.2 IMPACTS TO MARINE MAMMALS

While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, we would expect the number of takes to be larger than those that we expect under the Preferred Alternative, because the COU would not be required to implement “soft start” measures designed to warn marine mammals of impending increased underwater sound levels, and additional species may be incidentally taken because the COU would not be required to shut down construction activity if any marine mammals entered the project vicinity.

If the activities were to proceed without the protective measures and reporting requirements required by Alternative 1, the direct, indirect, and cumulative effects on the human or natural environment from not issuing the Authorization would include the following:

- Increases in the number of behavioral responses and frequency of changes in animal distribution, and potential takes to additional species, could occur because of the lack of mitigation measures required in the Authorization. Thus, the incidental take of marine mammals would likely occur at higher levels than we have already identified and evaluated in our *Federal Register* notice on the proposed Authorization;
- Marine mammals may be injured as a result of exposure to construction-related noise above the Level A harassment threshold, because the COU would not be required to implement mitigation measures that require shutdown of construction activities when marine mammals enter or approach the zones at which Level A harassment is expected to occur due to construction-related noise; and
- We would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock, as well as increased knowledge of the species, as required under the MMPA.

4.2.3 IMPACTS TO SUBSISTENCE USES

Under the No Action Alternative, we anticipate that the proposed construction project would have negligible effects on subsistence resources in the area. Even in the absence of mitigation measures, noise from pile removal and installation associated with the pier construction activities may temporarily displace marine mammals from the area but animals would be expected to return to the area following the cessation of pile removal and installation. Any displacement of sea lions or harbor seals from Dutch Harbor associated with the proposed construction project would be expected to be temporary and would not result in displacement of sea lions or harbor seals from traditional hunting areas. Subsistence hunting for humpback and killer whales does not occur in Unalaska. Further, the project location, Dutch Harbor is not used as a subsistence harvest area as it is a highly industrialized harbor. Therefore, no changes to availability of subsistence resources would result from the No Action Alternative.

4.3 COMPLIANCE WITH NECESSARY LAWS – NECESSARY FEDERAL PERMITS

NMFS determined that the issuance of an Authorization is consistent with the applicable requirements of the MMPA and ESA. Please refer to section 1.4 of this EA for more information.

4.4 UNAVOIDABLE ADVERSE IMPACTS

The COU's application, our *Federal Register* notice of proposed Authorization (81 FR 78969, November 10, 2016), and other environmental analyses identified previously summarize unavoidable adverse impacts to marine mammals or the populations to which they belong or on their habitats, as well as subsistence uses of marine mammals, occurring in the proposed project area. Unavoidable adverse impacts associated with the project include short-term behavioral disturbances to marine mammals, as described page 79829 of our *Federal Register* notice of proposed Authorization (81 FR 78969, November 10, 2016). These unavoidable adverse impacts are a product of the increase in noise in Dutch Harbor that would result from in-water construction, as described in Section 7 of the COU's application. We incorporate those documents by reference.

We acknowledge that the incidental take Authorization would potentially result in unavoidable adverse impacts. However, we do not expect that the COU's proposed construction activities would have adverse consequences on the viability of marine mammals in Dutch Harbor, on Amaknak Island, or on Unalaska Island. We do not expect the marine mammal populations in the area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. We expect that the numbers of individuals of all species taken by harassment would be small (relative to species or stock abundances), that the proposed construction activities and the take resulting from the construction activities would have a negligible impact on the affected species or stocks of marine mammals, and that there would not be any relevant subsistence impacts.

4.5 CUMULATIVE EFFECTS

NEPA defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

Past, present, and foreseeable impacts to marine mammal populations typically include: marine pollution; vessel traffic and vessel strikes; fishing gear entanglement; exposure to biotoxins and the resulting bioburden; acoustic masking from anthropogenic noise; and changes to prey base and habitat quality as a result of climate change. These activities and phenomena account for cumulative impacts to regional and worldwide populations of marine mammals, many of which are a small fraction of their former abundance. However, quantifying the biological costs for marine mammals within an ecological framework is a critical missing link to our assessment of cumulative impacts in the marine environment and assessing cumulative effects on marine mammals (Clark *et al.*, 2009).

Other environmental analyses identified previously summarize the potential cumulative effects to marine mammals, the populations to which they belong, or on their habitats occurring in the action area. We incorporate those documents and analyses by reference and briefly summarize them here. Thus, this cumulative effects analysis focuses on the activities that may temporally or

geographically overlap with the proposed construction activities and would most likely impact the marine mammals present in the proposed project area. We consider the impact of the COU's presence and effects of conducting construction activities in the proposed project area to be insignificant when compared to other human activities in the area.

Development and increased ship traffic have the potential to affect the project area through a reduction of available foraging habitat and increased disturbance due to noise and vessel presence. However, the proposed project area, Dutch Harbor, is highly industrialized and contains several active commercial dock facilities in addition to the UMC facility. Dutch Harbor is the largest and most active commercial fishing port in the Aleutian Islands (USACE, 2004) and is the largest commercial fishing port in the entire U.S. in terms of pounds landed (NMFS, 2015b). As a result, the harbor experiences a high volume of marine traffic. As described in Richardson *et al.* (1995), marine mammals in developed areas are likely habituated and tolerant to a certain degree of anthropogenic disturbance, including noise. While the proposed construction project is expected to result in a temporary increase in noise in Dutch Harbor, this temporary increase would not cumulatively result in significant adverse impacts to marine mammals or their habitats.

The following sections present a brief summary of the human-related activities affecting the marine mammals in the project area. Where applicable, we present an analysis of impacts to each activity attributed to the proposed dock construction project.

4.5.1 COASTAL DEVELOPMENT

Coastal development may result in the loss of habitat, increased vessel traffic, increased pollutants, and increased noise associated with construction and activities of the projects after construction. Several coastal development projects have occurred recently in the area of the proposed dock construction project, including the replacement and expansion of the Unisea dock in Iliuliuk Harbor (south of the proposed project on Amaknak Island) in 2016, the expansion of the existing dock in Captains Bay (south of the proposed project area in Unalaska Bay) in 2015, and the construction of a small boat harbor on the southeast coast of Amaknak Island (south of the proposed project location) in 2005.

We anticipate that coastal development projects in the area will continue in the foreseeable future as the project area is already highly developed and supports one of the largest commercial fishing fleets in the U.S. We expect the proposed construction would result in a temporary increase in noise in the project area; however the proposed construction project is not likely to add an increment of disturbance that would cumulatively result in significant adverse impacts to marine mammals or their habitats. To date, the chronic noise of Dutch Harbor, and nearby Iliuliuk Harbor, apparently has not prevented Steller sea lions and harbor seals from using the area, as indicated by the frequent sightings of both species near seafood processing and other dock facilities within the highly industrialized harbor. Noise associated with the proposed construction project would be temporary in nature. Additionally, as the proposed dock would replace an existing dock in a highly developed area, the proposed project is not expected to result in loss of habitat, increased vessel traffic, or increased pollutants as a result of development.

4.5.2 FISHERIES INTERACTIONS

Commercial and sport fisheries are a reasonably foreseeable activity that may result in cumulative effects to Steller sea lions and harbor seals in the project area. As described above, Dutch Harbor is a major commercial fishing port--the largest commercial fishing port in the

entire U.S. in terms of pounds landed (NMFS, 2015b). Commercial fishing operations in the project area would continue to provide an “artificial” food source for Steller sea lions and harbor seals for the foreseeable future. These operations would continue to contribute to apparent habituation of Steller sea lions and harbor seals to food sources aboard fishing vessels. Such fisheries may also result in direct mortality or injury to Steller sea lions and harbor seals due to entanglement in fishing gear, and the association of fishing vessels with a reliable and easy source of food on the part of marine mammals may increase the likelihood of fisheries interactions among those animals.

Though marine mammals are likely affected by the cumulative actions of the fishing industry in and around the project area, the proposed project is not likely to add an incremental disturbance that would cumulatively result in significant adverse impacts to marine mammals.

4.5.3 VESSEL TRAFFIC

The proposed project area regularly experiences a high volume of vessel traffic as a result of the active commercial fishing industry based in Dutch Harbor and nearby harbors on Amaknak Island and Unalaska Island including Iliuliuk Harbor. This high volume of vessel traffic is a reasonably foreseeable activity that may result in cumulative effects to Steller sea lions and harbor seals in the project area. These ongoing and future uses and activities contribute to elevated background noise levels in the project area, and increased exposure of marine mammals to vessel strikes. While marine mammals might be exposed to noise associated with vessel traffic, given the transitory nature of these vessels, any disturbance to a particular individual would be limited in space and time. No vessel traffic is directly associated with the proposed project, and the project is not anticipated to result in a cumulative increase in vessel traffic in the future, as the proposed new dock would replace an existing commercial fishing dock, and therefore would not result in a change in the amount of vessel traffic to the area. As such, there is limited potential that incremental effects associated with the proposed construction project would measurably affect marine mammals in the project area due to increased vessel traffic.

4.5.4 MARINE POLLUTION

Marine mammals are exposed to contaminants via the food they consume, the water in which they swim, and the air they breathe. Point and non-point source pollutants from coastal runoff, at-sea disposal of dredged materials and sewage effluent, marine debris, and potential hazardous material releases from commercial vessels and on-shore users are all persistent threats to marine mammals in the project area. Persistent organic pollutants (POPs) tend to bioaccumulate through the food chain; therefore, the chronic exposure to POPs in the environment is perhaps of the most concern to high trophic level predators such as harbor seals and Steller sea lions.

The proposed project is located in a busy commercial harbor that includes vessel refueling facilities. The proposed construction activities would be temporary and are not anticipated to cause increased exposure of POPs to marine mammals in the project vicinity due to the small scale and localized nature of the activities, and the fact that the project is not anticipated to result in a cumulative increase in pollutants from vessels as the proposed dock would replace an existing dock and therefore would not result in increased ship traffic to the area. Additionally, removed piles and demolished decking material would be transferred off-site for proper disposal.

4.5.5 CLIMATE CHANGE

Over the past 50 years, temperatures across Alaska increased by an average of 3.4°F. Winter warming was even greater, rising by an average of 6.3°F (Karl *et al.*, 2009). The rate of warming in Alaska was twice the national average over that same period of time. Average annual

temperatures in Alaska are projected to increase an additional 3.5 to 7°F by the middle of this century (Karl *et al.*, 2009). Precipitation in Alaska has also increased slightly, but the trend is not significant. Climate projections indicate that Alaskan winters are likely to be wetter, and that summers could become drier, as rising air temperatures accelerate the rate of evaporation (ACI 2004, Karl *et al.*, 2009).

We recognize that warming of this region could affect the prey base and habitat quality for marine mammals, however, the precise effects of climate change on the action area cannot be predicted at this time because the coastal marine ecosystem is highly variable in its spatial and temporal scales. Nonetheless, we expect that the conduct of the COU's proposed dock construction and the issuance of an Authorization to the COU would not result in any noticeable contributions to climate change.

4.5.6 SUMMARY OF CUMULATIVE EFFECTS

Coastal development, vessel traffic, fisheries interactions, marine pollution, and climate change continue to result in some level of impact to Steller sea lion, harbor seal, killer whale, and humpback whale populations in the wider Gulf of Alaska region. Nonetheless, the proposed construction activities would add another, albeit temporary, activity to the human environment of the project area. However, based on the analysis of activities presented in this section, NMFS determined that the incremental impact of an Authorization for the proposed construction project would not result in a cumulative significant impact to the environment. NMFS believes that incremental effects of incidental harassment associated with the COU's UMC dock construction project would not be detectable in any known measure on the health, survival, or abundance of marine mammals. This is due primarily to the temporary, localized nature of project-related noise (the subject of the Authorization), the previously-developed nature of the project area, and the extensive marine mammal mitigation and monitoring requirements of the Authorization.

CHAPTER 5 – LIST OF PREPARERS AND AGENCIES CONSULTED

Agencies Consulted:

Marine Mammal Commission

NMFS Alaska Regional Office
Protected Resources Division

Prepared By:

John Fiorentino
Fisheries Biologist
Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
NOAA, National Marine Fisheries Service

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