BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XF848]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the PetroMarine Services Juneau Rock Dump Terminal Reconstruction Project, Juneau, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from PetroMarine Services (PM) for authorization to take marine mammals incidental to the Juneau International Airport (JNU) Rock Dump Fuel Terminal Reconstruction Project in Juneau, Alaska (AK). Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to take marine mammals incidental to the specified activities. NMFS is also requesting comments on a possible one-time, 1-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization.

DATES: Comments and information must be received no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Comments should be addressed to Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.esch@noaa.gov*. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed below.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Carter Esch, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Section 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) directs the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). If such findings are made, NMFS must prescribe the permissible methods of taking; other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to as "mitigation"); and requirements pertaining to the monitoring and reporting of the takings. The definitions of all applicable MMPA statutory terms used above are included in the relevant sections below (see also 16 U.S.C. 1362; 50 CFR 216.3, 216.103).

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

Summary of Request

On February 18, 2026, NMFS received a request from PM for an IHA to take marine mammals incidental to vibratory pile driving and removal and impact pile driving associated with the JNU Rock Dump Fuel Terminal reconstruction project in Juneau, AK. Following NMFS' review of the application, PM submitted a revised version on April 20, June 1, and July 27, 2026. The application was deemed adequate and complete on August

28, 2026. PM's request is for take of five species of marine mammals by Level B harassment, and for a subset (harbor porpoises, harbor seals, and Steller sea lions (SSLs)), Level A harassment. Neither PM nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

PM proposes to replace an existing pile-supported T-dock and fuel float and construct improvements to the existing fuel line at the JNU Rock Dump Fuel Terminal Dock on the eastern side of Gastineau Channel near downtown Juneau, AK. The existing pile-supported T-dock and fuel float structures were constructed in 1971 and have exceeded the intended design life for timber structures in a marine environment. Replacing the existing structures and rerouting fuel lines will allow Petro Marine to safely and efficiently operate their fuel supply business.

Activities that have the potential to take marine mammals by Level A harassment and Level B harassment include vibratory pile removal and vibratory and impact pile driving. The specified activities would occur on approximately 81 days over 12 months.

Dates and Duration

The IHA would be effective upon written notification from PM to NMFS but not beginning later than 1 year from the date of issuance or extending beyond 2 years from the date of issuance. The specified activities are currently scheduled to begin January 1, 2027, and would occur on approximately 81 days (potentially non-consecutive). Pile removal and installation would occur during daylight hours only, which ranges from 8 to 18 hours per day in Juneau, AK, depending upon the season.

Specific Geographic Region

The project is located adjacent to downtown Juneau, AK, on the eastern shore of Gastineau Channel. Part of Southeast Alaska's Inside Passage, Gastineau Channel is a Ushaped, glacier-carved, fjord and narrow channel that, at its approximate midpoint, runs between Juneau (on mainland Alaska) and Douglas Island. The channel is approximately 16 miles (25.7 kilometers (km)) long and its width varies between 4,000 to 6,000 feet (ft) (1,219 to 1,829 meters (m)). The southern end of Gastineau Channel meets Stephens Passage, and the northern, shallower end opens into Auke Bay and Lynn Canal. Gastineau Channel experiences tidal ranges of 16.3 ft (4.9 m) (NOAA, 2025). There are 12 documented anadromous fish streams in the vicinity of the project (Alaska Department of Fish and Game [ADF&G] 2025a); each supporting at least one species of Pacific salmon.

The Juneau waterfront is heavily influenced by industrialization, characterized by a blend of heavy marine industrial activities and significant tourism infrastructure. The waterfront supports commercial seafood processing, fishing, and, historically, major mining operations. The area is frequented by commercial and recreational vessel traffic, most notably large cruise ships.

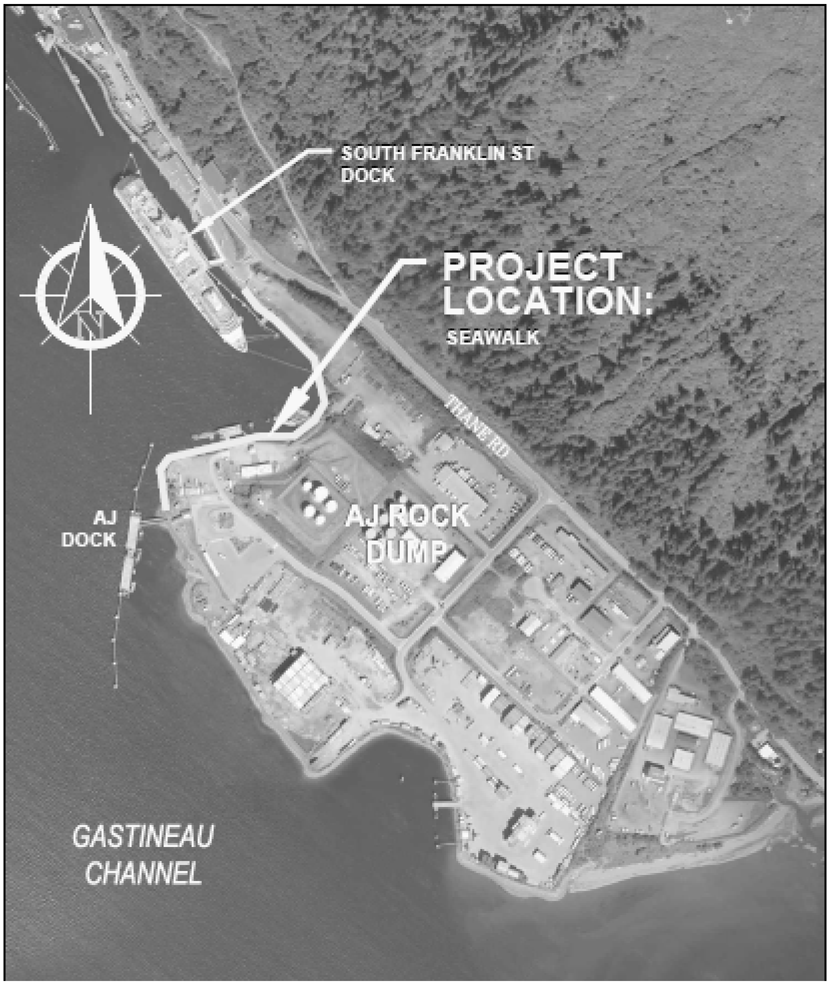

Figure 1 -- Map of Project Location

Detailed Description of the Specified Activity

The JNU Rock Dump Fuel Terminal Reconstruction Project would include reconstruction of a pile-supported T-dock and fuel float and improvements to existing fuel lines. In addition to the T-dock, PM would construct four new dolphins, install a new armor rock revetment to replace a timber-pile retaining wall, and complete upland improvements. Demolition of existing infrastructure (*i.e.*, original T-dock and fuel float structures, tie-back timber retaining wall) would precede installation of any new projects components.

To complete the project, PM would conduct vibratory pile removal and impact and vibratory pile driving, performed primarily from a crane barge and supported as necessary from shore to install and remove a variety of pile sizes (*i.e.*, 10-16-inch (in), 24-in, 30-in) and types (*i.e.*, timber or steel). Additional proposed activities include fill placement using a land-based excavator, and vessel operations (*i.e.*, tug and barge), although these activities are not expected to result in incidental harassment of marine mammals. Both the descriptions below and table 1 summarize the piling methods, pile size and quantity, installation timing, and effort of the specified activities.

Removal of Existing Dock and Piles

PM would remove the existing pile-supported fuel dock, fuel float, mooring and breasting dolphins and timber retaining wall near shore in their entirety using vibratory methods. PM would remove decking and float components first, followed by pile extraction; a barge laden with the demolition waste would be towed to the Seattle area for materials recycle and disposal within an authorized landfill. NMFS does not anticipate take from the barge towing waste, and it is not discussed further.

Dock Replacement

The new main dock will primarily consist of large diameter steel pipe piles, steel pile caps, timber decking, and an energy absorbing fender system. Prefabricated steel catwalks will be placed between the main fuel dock and two adjacent breasting dolphins and two mooring dolphins to provide pedestrian access for tending vessel mooring lines. A pile-supported approach dock of similar design will extend from shore to the main dock. The approach dock will be connected to shore by a pile-supported concrete abutment. It is anticipated that fuel lines will be rerouted from shore and run alongside the approach dock to a header cabinet on the main dock. A 4-ton hydraulic crane with an approximate 35-ft (10.7 m) reach will be located near the dock face, and fendering will be provided around the perimeter of the main dock.

PM would install temporary steel piles and template piles using a vibratory hammer to ensure proper positioning of the permanent piles. Permanent piles will be initially installed with vibratory pile driving equipment and then proofed for proper penetration and load capacity with an impact pile driver. Steel pile caps will be field welded to the tops of piles to support timber superstructure and decking. Prefabricated steel catwalks will be placed between the main fuel dock and adjacent breasting and mooring dolphins to provide pedestrian access for tending vessel mooring lines.

Pile quantities and installation methods are summarized in table 1.

Other Activities

Using an excavator along the top of the existing waterfront embankment slope, PM would remove existing embankment fill, which is undersized and prone to coastal erosion, and install approximately 2,200 cubic yards (CY) (1,682 cubic meters (m^3)) of armor rock in a layer 4-ft (1.2 m) in depth to mitigate slope erosion and surficial instability caused by wave and wake activity. The armor rock will stabilize the existing embankment slope between the new fuel dock and shore. Excavation and fill are not expected to result in take of marine mammals, and these activities are not discussed further.

Table 1 – PM's Proposed Construction Activities

Structure and Pile Parameters	Installation Method[1]	Project Total Number of Piles	Max Piles per Day	Average Piles per Day	Days of Effort[2]
Pile Removal					
Retaining Wall and Approach Dock (10”-16” Timber Piles)	V	50	12	10	6
Main Dock and Fuel Float (10”-16” Timber Piles)	V	124	12	8	16
Breasting Dolphin (10”-16” Timber Piles)	V	28	10	8	4
Mooring Dolphin (24" Steel Pipe Piles)	V	4	6	5	1
Mooring Dolphin (30" Steel Pipe Piles)	V	2	6	5	1
Temporary Piles					
Template (24” Steel Pipe Piles)	V	48	12	8	6
New Pile Installation					
Mooring and Breasting Dolphins (30” Steel Pipe Piles)	V I	14	2	1	14
Approach and Main Dock (24” Steel Pipe Piles)	V I	23	2	1	23
Abutment (24” Steel Pipe Piles)	V I	4	4	3	2

Fender Piles (16" Steel Pipe Piles)	V	12	6	5	3
	I				
Fender Piles (24" Steel Pipe Piles)	V	4	5	4	2
	I				
Fuel Line Support Piles (16"Steel Pipe Piles)	V	12	6	4	3
	I				

[1] Installation methods include vibratory pile driving (V) and impact pile driving (I).
[2] The number of construction days was calculated assuming average piles/day rate.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all this information, and we refer the reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species*).

Table 2 lists all species or stocks for which take is likely and proposed to be authorized for this activity and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is anticipated or proposed to be authorized here, PBR and annual mortality and serious injury (M/SI) from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' Alaska Marine Mammal Stock Assessments (*e.g.*, Young *et al.*, 2025). All values presented in table 2 are the most recently available at the time of publication and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*.

Table 2 -- Species[1], Stocks, and the Status of Marine Mammals with Estimated Take from the Specified Activities

Common Name	Scientific Name	Stock	ESA/MMPA Status; Strategic (Yes/No) [2]	Stock Abundance (CV, N_{min}, Most Recent Abundance Survey) [3]	Potential Biological Removal	Total Annual Mortality/Serious Injury [4]
Order Artiodactyla – Infraorder Cetacea – Mysticeti (Baleen Whales)						
Family Balaenopteridae						
Humpback Whale	*Megaptera novaeangliae*	Hawai'i	-, -, N	11,278 (0.56, 7,265, 2020)	127	27.09
		Mexico – North Pacific	T, D, Y	NA (NA, NA, 2006)[4]	UND	0.57
Odontoceti (Toothed Whales, Dolphins, and Porpoises)						
Family Delphinidae (Dolphins)						
Killer Whale	*Orcinus orca*	Eastern North Pacific Alaska Resident	-, -, N	1,920 (NA, 1,920, 2019)	19	1.3
		Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient	-, -, N	587 (NA, 587, 2012)	5.9	0.8
		Eastern Northern Pacific Northern Resident	-, -, N	302 (NA, 302, 2018)	2.2	0.2
		West Coast Transient	-, -, N	349 (NA, 349, 2018)	3.5	0.4
Family Phocoenidae (Porpoises)						
Harbor Porpoise	*Phocoena phocoena*	Northern Southeast Alaska Inland Waters	-, -, N	1,619 (0.26, 1,250, 2019)	13	5.6
Order Carnivora – Pinnipedia (Seals and Sea Lions)						
Family Otariidae (Eared Seals and Sea Lions)						
Steller Sea Lion	*Eumetopias jubatus*	Western	E, D, Y	49,837 (NA, 49,837, 2022)	299	267
		Eastern	-, -, N	36,308 (NA, 36,308, 2022)	2,178	93.2
Family Phocidae (Earless Seals)						
Harbor Seal	*Phoca vitulina*	Lynn Canal/Stephens Passage	-, -, N	13,388 (NA, 11,867, 2016)	214	50

[1] Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/).

[2] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-

caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.
[3] NMFS marine mammal SARs online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports*. CV is the coefficient of variation; N_{min} is the minimum estimate of stock abundance. NA is not available or applicable. UND is undetermined.
[4] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, vessel strike, Native subsistence mortality). Annual Mortality/Serious Injury often cannot be determined precisely and is in some cases presented as a minimum value or range.

As indicated above, table 2 lists the five species (10 total stocks) that temporally and spatially co-occur with the specified activities to the degree that incidental take is likely to occur. All species that could potentially occur in the proposed survey areas are included in table 3 of the IHA application.

While gray whales (*Eschrichtius robustus*), minke whales (*Balaena acutorostrata*), sperm whales (*Physeter macrocephalus*), Dall's porpoise (*Phocoenoides dalli*), and Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) have been documented in the area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further. Take of these species has not been requested nor proposed to be authorized, and these species are not considered further in this document. In addition, the northern sea otter (*Enhydra lutris kenyoni*) can be found in Southeast Alaska; however, this species is managed by the U.S. Fish and Wildlife Service and is not considered further in this document.

Humpback Whales

Humpback whales migrate to Southeast Alaska in spring to feed after months of fasting in equatorial breeding grounds in Hawaii and Mexico, although they have been observed in Southeast Alaska year-round (Baker *et al*., 1986). Individuals found in the project area are predominantly members of the Hawaii distinct population segment (DPS) (98 percent probability in Southeast Alaska); however, based on a comprehensive photoidentification study, members of the Mexico DPS have a small potential to occur in the project location (2 percent probability in Southeast Alaska) (Wade, 2021).

Peak abundance of humpback whales in Southeast Alaska typically occurs during late summer to early fall. Most humpback whales begin returning to southern breeding grounds in fall or winter. However, due to temporal overlap between whales departing and returning, humpbacks can be found in Alaskan feeding grounds in every month of the year (Baker *et al*., 1985; Straley, 1990; Wynne and Witteveen, 2009). Over-wintering (non-breeding) individuals may be skipping migration altogether in response to the availability of winter schools of fish, such as herring (Straley, 1990; Straley *et al*., 2018)). Large portions of Southeast Alaska have been identified as humpback whale biologically important areas (BIAs) for seasonal feeding due to the species' dependence on foraging resources in the region. The BIAs are active from April through October to overlap with the highest densities of humpback whales and their prey (Wild *et al*., 2023). Although not included in the BIA, the narrow Gastineau Channel is positioned between two known humpback whale foraging areas, Lynn Canal to the north and Stephens Passage to the south. In Stephens Passage, humpback whales are most often observed during seasons of high prey concentration, May through September (Witteveen *et al*., 2011); however, feeding humpback whales' presence in the Gulf of Alaska has also been correlated closely with peak abundance of Pacific herring (*Clupea pallasii*) during late fall and early winter. Therefore, humpbacks may be present year-round in southeast Alaska but are less common during the late winter and early spring. The project area is not located in or near designated critical habitat.

Killer Whales

Killer whales occur along the entire Alaska coast, in British Columbia and Washington inland waterways, and along the outer coasts of Washington, Oregon, and California. In Southeast Alaska, two resident ecotypes (Alaska Resident and Northern Resident) range from the Aleutian Islands to Washington State and two transient populations (West Coast Transient and Gulf of Alaska, Aleutian Islands and Bering Sea Transient) are found from California to Southeast Alaska (Young *et al*., 2026; Myers *et al*., 2021). Limited information is available regarding the occurrence of different stocks within the project area. Based on photograph identification from 2012 through 2016, Luck (2017) estimated that 55 percent of the population in the Juneau area is from resident stocks and 43 percent is from transient stocks; however, citizen science sources, including Happy Whale and local experts, have primarily observed the transient ecotype in the vicinity of the project.

Harbor Porpoises

In southeast Alaska, harbor porpoises from the Northern Southeast Alaska Inland Waters stock utilize coastal waters from Cape Suckling to the Canada border (Dalheim *et al*., 2009; Muto *et al*., 2022). While harbor porpoises occur most frequently in water depths less than 100 m (Hobbs and Waite, 2010), they have been documented foraging in waters up to 200 m deep feeding on small pelagic schooling fish such as herring and cod (Bjørge and Tolley 2009; Wynne *et al*., 2011). Calving generally occurs from May to August but can vary by region. Little else is known about harbor porpoises in southeast Alaska, including the project area, prompting the ADF&G in 2024 to begin collecting data through multi-year aerial and vessel-based surveys to elucidate harbor porpoise numbers, habitat use, and patterns in genetic relatedness. Although harbor porpoises are common in coastal areas of Southeast Alaska's Inside Passage, sightings in Gastineau Channel are relatively rare.

Steller Sea Lions

The majority of Steller sea lions (SSLs) that inhabit Southeast Alaska are part of the Eastern DPS; however, branded individuals from the Western DPS make regular movements across the 144° longitude boundary to the northern ''mixing zone'' haulouts and rookeries within Southeast Alaska (Jemison *et al*., 2013). While haulouts and rookeries in the northern portion of Southeast Alaska may be important areas for Western DPS animals, there continues to be little evidence that their regular range extends to the southern haulouts and rookeries in Southeast Alaska (Jemison *et al*., 2018). However, genetic data analyzed in Hastings *et al*. (2020) indicated that up to 1.4 percent of Steller sea lions near the project area may be members of the Western DPS, which NMFS recommends using in their 2020 guidance (Hastings *et al*., 2020; NMFS, 2020). There are several haulouts in Southeast Alaska but none in Gastineau Channel; the nearest haulout, Benjamin Island, is approximately 45 km (28 mi) from the JNU Rock Dump Fuel Terminal.

Harbor Seals

Harbor seals occur year-round in the inside passages of Southeast Alaska and are regularly sighted in Gastineau Channel. Harbor seals forage on fish and invertebrates (Orr *et al*., 2004), including capelin, eulachon, cod, pollock, flatfish, shrimp, octopus, and squid (Wynne, 2012). They are opportunistic feeders that forage in marine, estuarine, and occasionally freshwater habitat, adjusting their foraging behavior to take advantage of prey that are locally and seasonally abundant (Payne and Selzer, 1989). Research has demonstrated that harbor seals conduct both shallow and deep dives while foraging (Tollit *et al*., 1997), depending on prey availability.

Harbor seals use a variety of terrestrial sites to haul out for resting (year-round), pupping (May-July), and molting (August-September) including tidal and intertidal reefs, beaches, sand bars, and glacial/sea ice. Some sites have traditional/historic value for pupping and molting while others are used as temporary resting sites during seasonal foraging trips. Harbor seals usually give birth to a single pup between May and mid-July; birthing locations are dispersed over several haulout sites and not confined to major rookeries (Klinkhart *et al*., 2008). They are nonmigratory; their local movements are associated with tides, weather, season, food availability, and reproduction, as well as sex and age class (Swain *et al*., 1996; Lowry *et al*., 2001; Boveng *et al*., 2012). Up to 44 percent of their time is spent hauled out, with hauling out occurring more often during the summer (Pitcher and Calkins 1979; Kinkhart *et al.* 2008). Harbor seals typically haul out in groups of 30 or less but have been known to rarely haul out in numbers of several hundred. There are no key haulout locations defined for harbor seals in the project area, but harbor seals are known to haul out on the shoals near the DIPAC hatchery northwest of the project (Alaska Fisheries Science Center [AFSC] 2025); thus, moderate numbers of seals can be expected to move up Gastineau Channel through the project area toward this haulout, particularly during hatchery releases.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007; 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc.*). Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from composite audiograms, previous analyses in NMFS (2018), and/or data from Southall *et al*. (2007) and Southall *et al.* (2019). We note that the names of two hearing groups and the generalized hearing ranges of all marine mammal hearing groups have been recently updated (NMFS, 2024) as reflected below in table 3.

Table 3 -- Marine Mammal Hearing Groups (NMFS, 2024)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 36 kHz
High-frequency (HF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
Very High-frequency (VHF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	200 Hz to 165 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	40 Hz to 90 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 68 kHz

* Represents the generalized hearing range for the entire group as a composite (*i.e.*, all species within the group), where individual species' hearing ranges may not be as broad. Generalized hearing range chosen based on approximately 65 dB threshold from composite audiogram, previous analysis in NMFS (2018), and/or data from Southall *et al.* (2007) and Southall *et al.* (2019). Additionally, animals are able to detect very loud sounds above and below that "generalized" hearing range.

For more detail concerning these groups and associated frequency ranges, please see NMFS (2024) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section discusses how components of the specified activity may impact marine mammals and their habitat. The **Estimated Take of Marine Mammals** section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the content of this section, the **Estimated Take of Marine Mammals** section, and the **Proposed Mitigation** section to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Acoustic effects on marine mammals during the specified activities are likely to result from impact pile installation and vibratory pile installation and removal. The effects of underwater noise generated by PM's proposed activities have the potential to result in Level B harassment of marine mammals in the action area and, for some species/stocks as a result of certain proposed activities, Level A harassment.

There are a variety of types and degrees of effects to marine mammals, prey species, and habitat that could occur as a result of the proposed activities. Below we provide a brief description of the types of sound sources that would be generated by the project, the general impacts from these types of activities, and an analysis of the anticipated impacts on marine mammals from the project, with consideration of the proposed mitigation measures.

Description of Sound Sources

Activities associated with the PM project that have the potential to incidentally take marine mammals through sound exposure include vibratory removal of timber piles, vibratory installation of steel piles, and impact installation of steel piles. Impact hammers typically operate by repeatedly dropping and/or pushing a heavy piston onto a pile to drive the pile into substrate. Sound generated by impact hammers is impulsive, characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into substrate. Vibratory hammers typically produce less sound (*i.e.*, lower levels) than impact hammers. Peak sound pressure levels (SPL_{pk}) may be 180 dB or greater but are generally 10–20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.*, 2009; California Department of Transportation, 2020). Sounds produced by vibratory hammers are non-impulsive; compared to sounds produced by impact hammers, the rise time is slower, reducing the probability and severity of injury, and the sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al.*, 2005).

The likely or possible impacts of PM's proposed activities on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel. However, given that there are no consistent or dedicated pinniped haulouts within the immediate vicinity of any of the six project sites, we have determined that visual and other nonacoustic stressors would be limited, and any impacts on marine mammals are primarily expected to be acoustic in nature.

Potential Effects of Underwater Sound on Marine Mammals

The introduction of anthropogenic noise into the aquatic environment from vibratory and impact pile driving are the means by which marine mammals may be harassed from PM's specified activities. Anthropogenic sounds span a broad range of frequencies and sound levels and can have highly variable impacts on marine life, from none or minor to potentially severe responses, depending on received levels, duration of exposure, behavioral context, and other factors. Broadly, underwater sound from active acoustic sources, such as those in these projects, can potentially result in one or more of the following: temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking (Richardson *et al*., 1995, Nowacek *et al*., 2007, Southall *et al*., 2007, Götz *et al*., 2009).

We describe the more severe effects of certain non-auditory physical or physiological effects only briefly, as we do not expect that the use of impact/vibratory hammers is reasonably likely to result in such effects. Potential physiological effects from sound sources, particularly impulsive sound, can range from behavioral disturbance or tactile perception to physical discomfort, slight injury to the internal organs and the auditory system, or mortality (Yelverton *et al*., 1973). Non-auditory physiological effects or injuries that theoretically might occur in marine mammals exposed to high level underwater sound or as a secondary effect of extreme behavioral reactions (*e.g.*, change in dive profile as a result of an avoidance reaction) caused by exposure to sound include neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage (Cox *et al*., 2006, Southall *et al*., 2007, Zimmer and Tyack, 2007, Tal *et al*., 2015). However, the project activities considered here do not involve the use of devices such as explosives or mid-frequency tactical sonar that are associated with these types of effects.

Regarding non-acoustic effects, while harbor seals and Steller sea lions are known to haul out in southeast Alaska, there are no rookeries or known dedicated haulouts for either of these species in the immediate vicinity of the project areas (see **Description of Marine Mammals in the Area of Specified Activities** section). Ultimately, we expect that any visual and/or other non-acoustic stressors would be limited and that any impact on marine mammals would be acoustic in nature.

In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.*, 2007, 2019). Exposure to anthropogenic noise can result in auditory threshold shifts and behavioral responses (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). It can also lead to non-observable physiological responses, such as increased stress hormone levels. Additional noise in a marine mammal's habitat can mask acoustic cues used in daily functions, such as communication and predator-prey detection.

The degree of effect of an acoustic exposure on marine mammals is dependent on several factors, including, but not limited to, sound type (*e.g.*, impulsive vs. non-impulsive), signal characteristics, the species, age, and sex class (*e.g.*, adult male vs. mom with calf), duration of exposure, the distance between the noise source and the animal, received levels, behavioral state at time of exposure, and previous history with exposure (Wartzok *et al*., 2004, Southall *et al*., 2007). In general, sudden, high-intensity sounds can cause hearing loss, as can longer exposures to lower-intensity sounds. Moreover, any temporary or permanent loss of hearing, if it occurs at all, would occur almost exclusively for noise within an animal's hearing range. Below, we describe the specific acoustic effects that may result incidental to PM's proposed activities.

Richardson *et al*. (1995) described zones of increasing effect intensity that might be expected to occur with distance from a source, assuming that the signal is within an animal's hearing range. First (at the greatest distance) is the area within which the acoustic signal would be audible (potentially perceived) to the animal but not strong enough to elicit any overt behavioral or physiological response. The next zone (closer to the receiving animal) corresponds to the area where the signal is audible to the animal and sufficiently intense to elicit behavioral or physiological responsiveness. The third is a zone within which, for high-intensity signals, the received level is sufficient to cause discomfort or tissue damage to auditory or other systems. Overlaying these zones to some extent is the area within which masking (*i.e.*, when a sound interferes with or masks an animal's ability to detect a signal of interest above the absolute hearing threshold) may occur; the masking zone may vary widely in size.

Below, we provide additional details regarding potential impacts on marine mammals and their habitats from noise in general, starting with hearing impairment, as well as from the specific activities PM plans to conduct, to the extent it is available.

Hearing Threshold Shifts

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the audibility threshold at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018, 2024). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018, 2024), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.*, impulsive or non-impulsive), the likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, the time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.*, spectral content), the hearing frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.*, how the animal uses sound within the frequency band of the signal; *e.g.*, (Kastelein *et al*., 2014), and the overlap between the animal and the source (*e.g.*, spatial, temporal, and spectral).

Auditory Injury (AUD INJ)

NMFS (2024) defines AUD INJ as damage to the inner ear that can result in destruction of tissue, such as the loss of cochlear neuron synapses or auditory neuropathy (Houser, 2021; Finneran, 2024). AUD INJ may or may not result in a permanent threshold shift (PTS). PTS is subsequently defined as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2024). PTS does not generally affect more than a limited frequency range, and an animal that has incurred PTS has some level of hearing loss at the relevant frequencies; typically, animals with PTS or other AUD INJ are not functionally deaf (Au and Hastings, 2008; Finneran, 2016). Available data from humans and other terrestrial mammals indicate that a 40-dB threshold shift approximates AUD INJ onset (see Ward *et al.*, 1958, 1959; Ward, 1960; Kryter *et al.*, 1966; Miller, 1974; Ahroon *et al.*, 1996; Henderson *et al.*, 2008). AUD INJ levels for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.*, 2008), there are no empirical data measuring AUD INJ in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing AUD INJ are not typically pursued or authorized (NMFS, 2024).

Temporary Threshold Shift (TTS)

TTS is a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2024), and is not considered an AUD INJ. Based on data from marine mammal TTS measurements (see Southall *et al.*, 2007, 2019), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Finneran *et al.*, 2000, 2002; Schlundt *et al.*, 2000). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with the 24-hour cumulative sound exposure level (SEL_{24}) in an accelerating fashion: at low exposures with lower SEL_{24}, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SEL_{24}, the growth curves become steeper and approach linear relationships with the sound exposure level (SEL).

Depending on the degree (elevation of threshold in dB), duration (*i.e.*, recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to more impactful (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more severe impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.*, 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). TTS is the mildest form of hearing impairment that can occur during exposure to sound. While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends. For cetaceans, published data on the onset of TTS are limited to captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*) (Southall *et al.*, 2019). For pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals *(Mirounga angustirostris*), bearded seals (*Erignathus barbatus*), and California sea lions (Kastak *et al.*, 2007; Kastelein *et al.*, 2019b, 2019c, 2022a, 2022b; Reichmuth *et al.*, 2019; Sills *et al.*, 2020). TTS was not observed in spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to single airgun impulse sounds at levels matching previous predictions of TTS onset (Reichmuth *et al.*, 2016). These studies examine hearing thresholds measured in marine mammals before and after exposure to intense or long-duration sound exposures. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of threshold shift at various post-exposure times.

The amount and onset of TTS depends on the exposure frequency. Sounds below the region of best sensitivity for a species or hearing group are less hazardous than those near the region of best sensitivity (Finneran and Schlundt, 2013). At low frequencies, onset-TTS exposure levels are higher compared to those in the region of best sensitivity (*i.e.*, a low frequency noise would need to be louder to cause TTS onset when TTS exposure level is higher), as shown for harbor porpoises and harbor seals (Kastelein *et al.*, 2019a, 2019c). Note that in general, harbor seals and harbor porpoises have a lower

TTS onset than other measured pinniped or cetacean species (Finneran, 2015). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Mooney *et al.*, 2009; Finneran *et al.*, 2010; Kastelein *et al.*, 2014, 2015). This means that TTS predictions based on the total SEL_{24} will overestimate the amount of TTS from intermittent exposures, such as sonars and impulsive sources. Nachtigall *et al.* (2018) describe measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale (*Pseudorca crassidens*)) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing during prolonged exposures or if conditioned to anticipate intense sounds. Another study showed that echolocating animals (including odontocetes) might have anatomical specializations that might allow for conditioned hearing reduction and filtering of low-frequency ambient noise, including increased stiffness and control of middle ear structures and placement of inner ear structures (Ketten *et al.*, 2021). Data available on noise-induced hearing loss for mysticetes are currently lacking (NMFS, 2024). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species.

Relationships between TTS and AUD INJ thresholds have not been studied in marine mammals, and there are no measured PTS data for cetaceans, but such relationships are assumed to be similar to those in humans and other terrestrial mammals. AUD INJ typically occurs at exposure levels at least several dB above that inducing mild TTS (*e.g.*, a 40-dB threshold shift approximates AUD INJ onset (Kryter *et al.*, 1966; Miller, 1974), while a 6-dB threshold shift approximates TTS onset (Southall *et al.*, 2007, 2019). Based on data from terrestrial mammals, a precautionary assumption is that the

AUD INJ thresholds for impulsive sounds (such as impact pile driving pulses as received close to the source) are at least 6 dB higher than the TTS threshold on a peak-pressure basis and AUD INJ cumulative sound exposure level thresholds are 15 to 20 dB higher than TTS cumulative sound exposure level thresholds (Southall *et al.*, 2007, 2019). Given the higher level of sound or longer exposure duration necessary to cause AUD INJ as compared with TTS, it is considerably less likely that AUD INJ could occur.

Behavioral Effects

Exposure to noise also has the potential to behaviorally disturb marine mammals response—in other words, not every response qualifies as behavioral disturbance, and for responses that do, those of a higher level, or accrued across a longer duration, have the potential to affect foraging, reproduction, or survival. Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses may include changing durations of surfacing and dives, changing direction and/or speed; reducing/increasing vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); eliciting a visible startle response or aggressive behavior (such as tail/fin slapping or jaw clapping); and avoidance of areas where sound sources are located. In addition, pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006).

Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.*, Richardson *et al.*, 1995; Wartzok *et al.*, 2003; Southall *et al.*, 2007, 2019; Weilgart, 2007; Archer *et al.*, 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.*, 2012), and can vary depending on characteristics associated with the sound source (*e.g.*, whether it is moving or stationary, number of sources, distance from the source). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see appendices B and C of Southall *et al.* (2007) and Gomez *et al.* (2016) for reviews of studies involving marine mammal behavioral responses to sound.

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.*, 2003). Animals are most likely to habituate to sounds that are predictable and unvarying. It is important to note that habituation is appropriately considered as a "progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial," rather than as, more generally, moderation in response to human disturbance (Bejder *et al.*, 2009). The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure.

As noted above, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.*, 1995; Wartzok *et al.*, 2003; National Research Council (NRC), 2005). Controlled experiments with captive marine mammals have shown pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.*, 1997). Observed responses of wild marine mammals to loud-pulsed sound sources (*e.g.*, seismic airguns) have been varied but often consist of avoidance behavior or other behavioral changes (Richardson *et al.*, 1995; Morton and Symonds, 2002; Nowacek *et al.*, 2007).

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal (*e.g.*, Erbe *et al.*, 2019). If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. If a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.*, Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005). However, there are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Avoidance and Displacement

Changes in dive behavior can vary widely and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (*e.g.*, Frankel and Clark, 2000; Costa *et al.*, 2003; Ng and Leung, 2003; Nowacek *et al.*, 2004; Goldbogen *et al.*, 2013a, 2013b). Variations in dive behavior may reflect interruptions in biologically significant activities (*e.g.*, foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.*, bubble nets or sediment plumes), or changes in dive behavior. Acoustic and movement bio-logging tools also have been used in some cases to infer responses to anthropogenic noise. For example, Blair *et al.* (2016)

reported significant effects on humpback whale foraging behavior in Stellwagen Bank in response to ship noise including slower descent rates, and fewer side-rolling events per dive with increasing ship nose. In addition, Wisniewska *et al.* (2018) reported that tagged harbor porpoises demonstrated fewer prey capture attempts when encountering occasional high-noise levels resulting from vessel noise as well as more vigorous fluking, interrupted foraging, and cessation of echolocation signals observed in response to some high-noise vessel passes. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.*, Croll *et al.*, 2001; Nowacek *et al.*, 2004; Madsen *et al.*, 2006; Yazvenko *et al.*, 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Respiration rates vary naturally with different behaviors and alterations to breathing rate as a function of acoustic exposure can be expected to co-occur with other behavioral reactions, such as a flight response or an alteration in diving. However, respiration rates in and of themselves may be representative of annoyance or an acute stress response. Various studies have shown that respiration rates may either be unaffected or could increase, depending on the species and signal characteristics, again highlighting the importance in understanding species differences in the tolerance of underwater noise when determining the potential for impacts resulting from anthropogenic sound exposure (*e.g.*, Kastelein *et al.*, 2001; Gailey *et al.*, 2007). For example, harbor porpoise respiration rates increased in response to pile driving sounds at and above a received broadband SPL of 136 dB (zero-peak SPL: 151 dB referenced to 1 microPascal (μPa) (dB re 1 μPa); SEL of a single strike (SEL_{ss}): 127 dB re 1 μPa^2-s) (Kastelein *et al.*, 2013).

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors and is one of the most obvious manifestations of disturbance in marine mammals (Richardson *et al.*, 1995). Harbor porpoises, Atlantic white-sided dolphins (*Lagenorhynchus actusus*), and minke whales have demonstrated avoidance in response to vessels during line transect surveys (Palka and Hammond, 2001). In addition, beluga whales in the St. Lawrence Estuary in Canada have been reported to increase levels of avoidance with increased boat presence by way of increased dive durations and swim speeds, decreased surfacing intervals, and by bunching together into groups (Blane and Jaakson, 1994). Avoidance may be short-term, with animals returning to the area once the noise has ceased (*e.g.*, Bowles *et al.*, 1994; Morton and Symonds, 2002; Gailey *et al.*, 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (*e.g.*, Blackwell *et al.*, 2004; Bejder *et al.*, 2006; Teilmann *et al.*, 2006).

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (*e.g.*, directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996; Bowers *et al.*, 2018). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal stranding. However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008), and whether individuals are solitary or in groups may influence the response.

Behavioral disturbance can also impact marine mammals in more subtle ways. Increased vigilance may result in costs related to diversion of focus and attention (*i.e.*, when a response consists of increased vigilance, it may come at the cost of decreased attention to other critical behaviors such as foraging or resting). These effects have generally not been demonstrated for marine mammals, but studies involving fishes and terrestrial animals have shown that increased vigilance may substantially reduce feeding rates (*e.g.*, Beauchamp and Livoreil, 1997; Fritz *et al.*, 2002; Purser and Radford, 2011). In addition, chronic disturbance can cause population declines through reduction of fitness (*e.g.*, decline in body condition) and subsequent reduction in reproductive success, survival, or both (*e.g.*, Daan *et al.*, 1996; Bradshaw *et al.*, 1998). However, Ridgway *et al.* (2006) reported that increased vigilance in bottlenose dolphins exposed to sound over a 5-day period did not cause any sleep deprivation or stress effects.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.*, 2007). Consequently, a behavioral response lasting less than 1 day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.*, 2007). Note that there is a difference between multi-day substantive (*i.e.*, meaningful) behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

Physiological Stress Responses

An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.*, Selye, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.*, Moberg, 1987; Blecha, 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.*, 2004).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and "distress" is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well studied through controlled experiments and for both laboratory and free-ranging animals (*e.g.*, Holberton *et al.*, 1996; Hood *et al.*, 1998; Jessop *et al.*, 2003; Krausman *et al.*, 2004; Lankford *et al.*, 2005; Ayres *et al.*, 2012; Yang *et al.*, 2021). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker, 2000; Romano *et al.*, 2002b) and, more rarely, studied in wild populations (*e.g.*, Romano *et al.*, 2002a). For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales (*Eubalaena glacialis*). In addition, Lemos *et al*. (2022) observed a correlation between higher levels of fecal glucocorticoid metabolite concentrations (indicative of a stress response) and vessel traffic in gray whales. Yang *et al.* (2021) studied behavioral and physiological responses in captive bottlenose dolphins exposed to playbacks of "pile-driving-like" impulsive sounds, finding significant changes in cortisol and other physiological indicators but only minor behavioral changes. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as "distress." In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2005), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar construction projects.

Vocalizations and Auditory Masking

Since many marine mammals rely on sound to find prey, moderate social interactions, and facilitate mating (Tyack, 2008), noise from anthropogenic sound sources can interfere with these functions, but only if the noise spectrum overlaps with the hearing sensitivity of the receiving marine mammal (Southall *et al.*, 2007; Clark *et al.*, 2009; Hatch *et al.*, 2012). 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). Acoustic masking is when other noises such as from human sources interfere with an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.*, 1995; Erbe *et al.*, 2016). Therefore, under certain circumstances, marine mammals whose acoustical sensors or environments are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.*, signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.*, sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions (Hotchkin and Parks, 2013).

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation, click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales have been observed to increase the length of their songs (Miller *et al.*, 2000; Fristrup *et al.*, 2003) or vocalizations (Foote *et al.*, 2004), respectively, while North Atlantic right whales have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.*, 2007). Fin whales (*Balaenoptera physalus*) have also been documented lowering the bandwidth, peak frequency, and center frequency of their vocalizations under increased levels of background noise from large vessels (Castellote *et al.*, 2012). Other alterations to communication signals have also been observed. For example, gray whales, in response to playback experiments exposing them to vessel noise, have been observed increasing their vocalization rate and producing louder signals at times of increased outboard engine noise (Dahlheim and Castellote, 2016). Alternatively, in some cases, animals may cease sound production during production of aversive signals (Bowles *et al.*, 1994, Wisniewska *et al.*, 2018).

Under certain circumstances, marine mammals experiencing significant masking could also be impaired from maximizing their performance fitness in survival and reproduction. Therefore, when the coincident (masking) sound is anthropogenic, it may be considered harassment when disrupting or altering critical behaviors. It is important to distinguish TTS and PTS, which persist after the sound exposure, from masking, which occurs during the sound exposure. Because masking (without resulting in TS) is not associated with abnormal physiological function, it is not considered a physiological effect, but rather a potential behavioral effect (though not necessarily one that would be associated with harassment).

The frequency range of the potentially masking sound is important in determining any potential behavioral impacts. For example, low-frequency signals may have less effect on high-frequency echolocation sounds produced by odontocetes but are more likely to affect detection of mysticete communication calls and other potentially important natural sounds such as those produced by surf and some prey species. The masking of communication signals by anthropogenic noise may be considered as a reduction in the communication space of animals (*e.g.*, Clark *et al.*, 2009) and may result in energetic or other costs as animals change their vocalization behavior (*e.g.*, Miller *et al.*, 2000; Foote *et al.*, 2004; Parks *et al.*, 2007; Di Iorio and Clark, 2010; Holt *et al.*, 2009). Masking can be reduced in situations where the signal and noise come from different directions (Richardson *et al.*, 1995), through amplitude modulation of the signal, or through other compensatory behaviors, including modifications of the acoustic properties of the signal or the signaling behavior (Hotchkin and Parks, 2013). Masking can be tested directly in captive species (*e.g.*, Erbe, 2008), but in wild populations it must be either modeled or inferred from evidence of masking compensation. There are few studies addressing real-world masking sounds likely to be experienced by marine mammals in the wild (*e.g.*, Branstetter *et al.*, 2013).

Masking occurs in the frequency band that the animals utilize and is more likely to occur in the presence of broadband, relatively continuous noise sources such as vibratory pile driving. The energy distribution of sound from vibratory pile driving covers a broad frequency spectrum and is anticipated to be within the audible range of marine mammals present in the proposed action area. Since noises generated from the proposed construction activities are mostly concentrated at low frequencies (<2 kilohertz (kHz)), these activities likely have less effect on mid-frequency echolocation sounds produced by odontocetes (toothed whales). However, lower frequency noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. Low-frequency noise may also affect communication signals when they occur near the frequency band for noise and thus reduce the communication space of animals (*e.g.*, Clark *et al.*, 2009) and cause increased stress levels (*e.g.*, Holt *et al.*, 2009). Unlike TS, masking, which can occur over large temporal and spatial scales, can potentially affect the species at population, community, or even ecosystem levels, in addition to individual levels. Masking affects both senders and receivers of the signals, and at higher levels for longer durations, could have long-term chronic effects on marine mammal species and populations. However, the noise generated by PM's proposed activities will only occur intermittently, across an estimated total of 81 (not necessarily consecutive) days during the 1-year authorization period covered by each IHA, if finalized, in a relatively small area focused around the proposed construction site. Thus, PM's proposed activities may mask some acoustic signals that are relevant to the daily behavior of marine mammals, the short-term duration and limited areas affected make it very unlikely that the fitness of individual marine mammals would be impacted.

Airborne Acoustic Effects

Pinnipeds that occur near the project site could be exposed to airborne sounds associated with construction activities that have the potential to cause behavioral harassment, depending on their distance from these activities. Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels elevated above airborne acoustic harassment criteria. Although pinnipeds are known to haul out regularly on man-made objects, we believe that incidents of take resulting solely from airborne sound are unlikely due to the proximity between the proposed project area and the known haulouts (*e.g.*, 3.7 km and 8.6 km away for harbor seals; 61 km for Steller sea lions). Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when looking with their heads above water. Most likely, airborne sound would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to flush from haulouts, temporarily abandon the area, and or move further from the source. However, these animals would previously have been 'taken' because of exposure to underwater sound above the behavioral harassment thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further.

Potential Effects on Marine Mammal Habitat

PM's proposed activities could have localized, temporary impacts on marine mammal habitat, including prey, by increasing in-water SPLs. Increased noise levels may affect the acoustic habitat (refer to masking discussion) and adversely affect marine mammal prey in the vicinity of near the project areas (see discussion below). During impact and vibratory pile driving or removal, elevated underwater noise levels would ensonify the project areas where both fish and mammals occur and could affect foraging success. Additionally, marine mammals may avoid the area during the proposed construction activities; however, displacement due to noise is expected to be temporary and is not expected to result in long-term effects on the individuals or populations.

In-Water Construction Effects on Potential Foraging Habitat

As previously mentioned, the project area does not contain habitat of known importance, although it is located near an identified feeding BIA for humpback whales in Southeast Alaska, active from May through September (Wild *et al.*, 2023). However, the area only represents a tiny segment of foraging habitat for humpback whales. No critical habitat is located within the project area, and the project area is highly influenced by pre-existing and ongoing anthropogenic development and activities.

The total seafloor area likely to be impacted by PM's activities is relatively small compared to the vast foraging area available habitat in Southeast Alaska. At best, the impact area provides marginal foraging habitat for marine mammals and fish. Furthermore, proposed pile driving at the project site would not be expected to obstruct the movement or migration of marine mammals.

A temporary and localized increase in turbidity near the seafloor would occur in the immediate area due to the area where piles are installed or removed. In general, turbidity associated with pile installation is localized to about a 7.6-m radius around the pile. The sediments of the project site would settle out rapidly when disturbed. Cetaceans are not expected to be close enough to the pile-driving areas to experience the effects of turbidity, and any pinnipeds could avoid localized turbid areas. Depending on the tidal stage, local strong currents are anticipated to disburse any additional suspended sediments produced by project activities at moderate to rapid rates. Therefore, we expect the impact from increased noise is turbidity levels to be discountable to marine mammals and do not discuss it further.

The potential for prey (*i.e.*, fish) to temporarily avoid the immediate area also exists. The duration of fish and marine mammal avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution, and behavior is anticipated. Any behavioral avoidance of the disturbed area by fish or marine mammals would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity.

The proposed project will occur within the same footprint as existing marine infrastructure. The near-shore and intertidal habitat where the proposed project will occur is an area of relatively high marine vessel traffic. Most marine mammals do not generally use the area within the footprint of the project area. Temporary, intermittent, and short-term habitat alteration may result from increased noise levels during the proposed construction activities. Effects on marine mammals will be limited to temporary displacement from pile installation and removal noise, and effects on prey species will be similarly limited in time and space.

Temporary and localized reduction in water quality will occur as a result of in-water construction activities. Most of this effect would occur during the installation and removal of piles when seafloor sediments are disturbed. The installation and removal of piles would disturb seafloor sediments and may cause a temporary increase in suspended sediment in the project area. During pile extraction, sediment attached to the pile moves vertically through the water column until gravitational forces cause it to slough off under its own weight. The small resulting sediment plume is expected to settle out of the water column within a few hours. Studies of the effects of turbid water on fish (marine mammal prey) suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993).

Effects to turbidity and sedimentation are expected to be short-term, minor, and localized. Since there may be strong currents in the area, following the completion of sediment-disturbing activities, suspended sediments in the water column should dissipate and quickly return to background levels in all construction scenarios. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish species in the proposed project area. However, turbidity plumes associated with the project would be temporary and localized, and fish in the proposed project area would be able to move away from and avoid the areas where plumes may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary. In general, the area likely impacted by the proposed construction activities is relatively small compared to the available marine mammal habitat in Southeast Alaska.

Potential Effects on Prey

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fishes, zooplankton). Marine mammal prey varies by species, season, and location and, for some, is not well documented. Studies regarding the effects of noise on known marine mammal prey are described here.

Fishes utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (*e.g.*, Zelick *et al.*, 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et al.*, 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds that are especially strong and/or intermittent low-frequency sounds, and behavioral responses such as flight or avoidance are the most likely effects. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (*e.g.*, feeding, spawning, migration), and other environmental factors. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fishes (*e.g.* Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (*e.g.*, Fewtrell and McCauley, 2012; Pearson *et al.*, 1992; Skalski *et al.*, 1992; Santulli *et al.*, 1999; Paxton *et al.*, 2017). However, some studies have shown no or slight reaction to impulse sounds (*e.g.*, Peña *et al.*, 2013; Wardle *et al.*, 2001; Jorgenson and Gyselman, 2009; Cott *et al.*, 2012). More commonly, though, the impacts of noise on fishes are temporary.

SPLs of sufficient strength have been known to cause injury to fishes and fish mortality (summarized in Popper *et al.*, 2014). However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function is likely restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012b) showed that a TTS of 4 to 6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.*, 2012a; Casper *et al.*, 2013, 2017).

Fish populations in the proposed project area that serve as marine mammal prey could be temporarily affected by noise from pile installation and removal. The frequency range in which fishes generally perceive underwater sounds is 50 to 2,000 Hz, with peak sensitivities below 800 Hz (Popper and Hastings, 2009). Fish behavior or distribution may change, especially with strong and/or intermittent sounds that could harm fishes. High underwater SPLs have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper, 2005).

Zooplankton is a food source for several marine mammal species, as well as a food source for fish that are then preyed upon by marine mammals. Population effects on zooplankton could have indirect effects on marine mammals. Data are limited on the effects of underwater sound on zooplankton species, particularly sound from construction (Erbe *et al.*, 2019). Popper and Hastings (2009) reviewed information on the effects of human-generated sound and concluded that no substantive data are available on whether the sound levels from pile driving, seismic activity, or any human-made sound would have physiological effects on invertebrates. Any such effects would be limited to the area extremely near (1 to 5 m) the sound source and would result in no population effects because of the relatively small area affected at any one time and the reproductive strategy of most zooplankton species (short generation, high fecundity, and extremely high natural mortality). No adverse impact on zooplankton populations is expected to occur from the specified activity due in part to large reproductive capacities and naturally high levels of predation and mortality of these populations. Any mortalities or impacts that might occur would be negligible.

The greatest potential impact to marine mammal prey during construction would occur during impact pile driving. Impact and vibratory pile driving and removal could possibly elicit behavioral reactions from fishes such as temporary avoidance of the area but is unlikely to cause injuries to fishes or have persistent effects on local fish populations. However, generally, the duration of impact pile driving would be limited to the final stage of installation ("proofing") after the pile has been driven as close as practicable to the design depth with a vibratory driver (where necessary). In-water construction activities would only occur during daylight hours, allowing fish to forage and transit the project area in the evening.

Construction likely would have minimal permanent and temporary impacts on benthic invertebrate species, a marine mammal prey source. In addition, it should be noted that the area in question is considered low-quality habitat since it is already highly developed and experiences a high level of anthropogenic noise from normal operations and other vessel traffic.

There are several fish species near Juneau for which NMFS has identified Essential Fish Habitat (EFH), including: chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), and sockeye salmon (*O. nerka*) in fresh and estuarine waters; and staghorn sculpin (*Leptocottus armatus*), sablefish (*Anoplopoma fimbria*), Pacific Ocean perch (*Sebastes alutus*), yelloweye rockfish (*S. ruberrimus*), shortraker rockfish (*S. borea*), rougheye rockfish (*S. aleutianus*), dusky rockfish (*S. ciliatus*), Pacific cod, starry flounder (*Platichthys stellatus*), yellowfin sole (*Pleuronectes asper*), and rock sole (*P. bilineatus*)

(Federal Aviation Administration, 2005). Additionally, there are various other "forage fish" in marine waters located near the project area. These species may reside in many creeks and water bodies in the area (*i.e.*, Duck Creek, Jordan Creek, Mendenhall River, Tidal Sloughs, Low Marsh, and High Marsh) (Federal Aviation Administration, 2005). Given the temporary nature of activities and the number of additional waterbodies in the area that present viable habitat, adverse effects on EFH in this area are not expected.

Potential Effects on Foraging Habitat

The proposed project is not expected to result in any habitat related effects that could cause significant or long-term negative consequences for individual marine mammals or their populations, since installation and removal of in-water piles would be temporary and intermittent. The total seafloor area affected by pile installation and removal is an exceedingly small area compared to the vast foraging area available to marine mammals outside this project area. Although most of Southeast Alaska is identified as a BIA for humpback whales (Wild *et al.*, 2023), the proposed project area is outside of that BIA. It does not contain particularly high-value habitat and is not known to be of particular importance to humpback whales or any other species potentially impacted by PM's activities. The area impacted by the project is relatively small compared to the available habitat just outside the project area, and there are no areas of particular importance that would be impacted by this project. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for PM's construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant. Therefore, impacts of the project are not likely to have adverse effects on marine mammal foraging habitat in the proposed project area.

There are times of known seasonal marine mammal foraging in Southeast Alaska around fish processing/hatchery infrastructure or when fish are congregating, but the affected areas of Southeast Alaska are a small portion of the total foraging habitat available in the region. In general, effects on marine mammal prey species are expected to be minor and temporary due to the short timeframe of the project and the small project footprint.

Increased turbidity from construction activities can adversely affect forage fish and juvenile salmonid out-migratory routes in the project area. Both herring and salmon form a significant prey base for Steller sea lions, whereas herring is the primary prey species of humpback whales; both herring and salmon are components of the diet of many other marine mammal species that occur in the project area. Increased turbidity is expected to occur near construction activities. However, suspended sediments and particulates are expected to dissipate quickly within a single tidal cycle. Given the limited area affected and high tidal dilution rates, any effects on forage fish and salmon are expected to be minor or negligible. In addition, best management practices would be in effect, limiting the extent of turbidity to the immediate project area. Finally, exposure to turbid waters from construction activities is not expected to differ from the current exposure; fish of the disturbed area and marine mammals in the Southeast Alaska region are routinely exposed to substantial levels of suspended sediment from glacial sources.

In summary, given the temporary nature of the construction project and relatively small areas being affected, the pile driving installation and removal activities associated with the proposed action are not likely to have a permanent, adverse effect on any fish habitat or populations of fish species. The most likely impact to fishes at the project site would be temporary avoidance of the area. The most likely impact on fish from pile driving and removal activities at the project area would be temporary behavioral avoidance of the area. The duration of fish avoidance in this area after pile driving stops is unknown, but a rapid return to regular recruitment, distribution, and behavior is anticipated. Any behavioral avoidance by fish in disturbed areas would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. Thus, we preliminarily conclude that the impacts of the specified activities are not likely to have more than short-term adverse effects on any prey habitat or populations of prey species. Further, any impacts to marine mammal habitat are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to the adverse effects on their populations.

Estimated Take of Marine Mammals

This section provides an estimate of the number of incidental takes proposed for authorization through the IHA, which will inform NMFS' consideration of "small numbers," the negligible impact determinations, and impacts on subsistence uses.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) 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).

Takes proposed for authorization would primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, vibratory and impact pile driving) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (AUD INJ) (Level A harassment) to result for harbor porpoises, Steller sea lions, and harbor seals. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic criteria above which NMFS believes there is some reasonable potential for marine mammals to be behaviorally harassed or incur some degree of AUD INJ; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Criteria

NMFS recommends the use of acoustic criteria that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur AUD INJ of some degree (equated to Level A harassment).

Level B Harassment

Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al*., 2007, 2021; Ellison *et al*., 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared sound pressure levels (RMS SPL) of 120 dB re 1 μPa) for continuous (*e.g.*, vibratory pile driving) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

PM's proposed activities include the use of continuous (vibratory pile driving and removal) and impulsive (impact pile driving) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa are applicable.

Level A harassment.

NMFS' Updated Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) (NOAA, 2024) identifies dual criteria to assess AUD INJ (Level A harassment) to five different underwater marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). PM's proposed activities include the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) sources.

The 2024 Updated Technical Guidance criteria include both updated thresholds and updated weighting functions for each hearing group. The thresholds are provided in the table below. The references, analysis, and methodology used in the development of the criteria are described in NMFS' 2024 Updated Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance-other-acoustic-tools*.

Table 4 -- Thresholds Identifying the Onset of Auditory Injury

	AUD INJ Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 222 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 197 dB
High-Frequency (HF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,HF,24h}$: 193 dB	*Cell 4* $L_{E,HF,24h}$: 201 dB
Very High-Frequency (VHF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,VHF,24h}$: 159 dB	*Cell 6* $L_{E,VHF,24h}$: 181 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 223 dB $L_{E,PW,24h}$: 183 dB	*Cell 8* $L_{E,PW,24h}$: 195 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 230 dB $L_{E,OW,24h}$: 185 dB	*Cell 10* $L_{E,OW,24h}$: 199 dB

* Dual metric criteria for impulsive sounds: Use whichever criteria results in the larger isopleth for calculating AUD INJ onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level criteria associated with impulsive sounds, the PK SPL criteria are recommended for consideration for non-impulsive sources.

Note: Peak sound pressure level (Lp,0-pk) has a reference value of 1 µPa (underwater) and 20 µPa (in air), and weighted cumulative sound exposure level ($L_{E,24h}$) has a reference value of 1 µPa^{2}s (underwater) and (20 µPa)^{2}s (in air). In this Table, criteria are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017; ISO 2020). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals underwater (*i.e.*, 7 Hz to 165 kHz) or in air (*i.e.*, 42 Hz to 52 kHz). The subscript associated with cumulative sound exposure level criteria indicates the designated marine mammal auditory weighting function (LF, HF, and VHF cetaceans, and PW, OW, PA, and OA pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level criteria 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 criteria will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, vibratory pile removal and installation, and impact pile driving). The source levels assumed for both removal and installation activities are based on reviews of measurements of the same or similar types and dimensions available in the scientific literature and from similar coastal construction projects. Source levels for each pile size and activity are presented in table 5. Source levels for vibratory installation and removal of piles of the same diameter are assumed to be the same.

Table 5 -- Proxy Sound Source Levels

Pile Size and Type	Source Level (at 10 m)			Reference
	Peak (dB re 1 μPa)	RMS (dB re 1 μPa)	SEL (dB re 1 μPa2 sec)	
Vibratory				
10- to 16-in timber pile	NA	162	NA	(Caltrans, 2020)
16-in steel pipe pile	NA	163	NA	(Caltrans, 2020)
24-in steel pipe pile	NA	163	NA	(U.S. Navy, 2012, U.S. Navy, 2013, Miner, 2020)*
30-in steel pipe pile	NA	166	NA	(U.S. Navy, 2012, U.S. Navy, 2013, Sexton, 2007, Laughlin, 2011, Laughlin, 2017, Miner, 2020)*
Impact				
16-in steel pipe pile	200	185	175	(Caltrans, 2020)
24-in steel pipe piles	203	190	177	(Caltrans, 2015)
30-in steel pipe piles	210	190	177	(Caltrans, 2020)– Russian River Geyersville, CA; Terminal Replacement, Antioch, CA, (Illingworth & Rodkin, 2017)-Philadelphia, PA; (Austin *et al.*, 2016)*

*Methodology followed the U.S. Navy (2015) and included available data from Puget Sound, Washington, and Southern Alaska.

Transmission Loss (*TL*) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. *TL* parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and seafloor composition and topography. The general formula for underwater *TL* is:

$$TL = B \times Log10(R_1/R_2),$$

where:

TL = transmission loss in dB,

B = transmission loss coefficient,

R_1 = the distance of the modeled SPL from the driven pile, and

R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source depends on various factors, most notably the water bathymetry and the presence or absence of reflective or absorptive conditions, including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log[range]). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log[range]). A practical spreading value of 15 is often used in coastal waters, such as those found in the PM JNU Rock Dump Fuel Terminal Reconstruction Project area. In these environments, sound waves repeatedly reflect off the surface and bottom, reflecting an expected propagation environment between spherical and cylindrical spreading-loss conditions. Therefore, the default coefficient of 15 is used to calculate distances to the Level A harassment and Level B harassment threshold isopleths.

Assuming practicable spreading and other assumptions regarding the source characteristics and operational logistics (*e.g.*, source level, number of strikes per pile, number of piles per day), PM calculated distances to the Level A harassment and Level B harassment thresholds and the associated ensonified areas. Because an ensonified area associated with Level A harassment is more technically challenging to predict given the accounting for a cumulative energy component that changes over time, to assist applicants in assessing the potential for Level A harassment without the need for complex modeling, NMFS developed an optional User Spreadsheet tool to accompany the 2024 Updated Technical Guidance (see *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance-other-acoustic-tools*). This relatively simple tool can be used to calculate a Level A harassment isopleth distance for use in conjunction with marine mammal density or occurrence to help predict the amount of take that may occur incidental to an activity. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources (*i.e.*, vibratory pile driving and removal, impact pile driving), the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur AUD INJ. Inputs used in the optional User Spreadsheet tool include the source levels in table 5 and values in table 6 below.

Table 6 – User Spreadsheet Input Parameters[1] for Calculating Level A Harassment Threshold Isopleths for Pile Driving and Removal

Structure and Pile Parameters	Installation Method[2]	Max Piles per Day[3]	Average Piles per Day	Minutes (Vibratory) or

				Strikes per Pile (Impact)
Pile Removal				
Retaining Wall and Approach Dock (10”-16” Timber piles)	V	12	10	20
Main Dock and Fuel Float (10”-16” Timber piles)	V	12	8	20
Breasting Dolphin (10”-16” Timber piles)	V	10	8	30
Mooring Dolphin (24" steel pipe piles)	V	6	5	30
Mooring Dolphin (30" steel pipe piles)	V	6	5	30
Temporary Piles				
Template Construction Piles (24” steel pipe piles)	V	12	8	60
New Pile Installation				
Mooring and Breasting Dolphins (30” steel pipe piles)	V	2	1	180
	I			2000
Approach and Main Dock (24” steel pipe piles)	V	2	1	120
	I			1200
Abutment (24” steel pipe piles)	V	4	3	90
	I			600
Fender Piles (16” steel pipe piles)	V	6	5	90
	I			400

Fender Piles (24” steel pipe piles)	V	5	4	90
	I			400
Fuel Line Support Piles (16” steel pipe piles)	V	6	4	90
	I			600

[1] User Spreadsheet inputs - Vibratory pile driving tab A.1 (stationary source: non-impulsive, continuous), WFA 2; Impact pile driving tab E.1 (stationary source: impulsive, intermittent), WFA 2.5
[2] Installation methods include vibratory pile driving (V) and impact pile driving (I).
[3] Estimates of the cumulative 24-hr sound energy exposure metric relevant for assessing the potential for Level A harassment assumed the maximum piles/day rate.

Using the practical spreading model, NMFS determined that the underwater noise would yield the following calculated distances to the Level A harassment and Level B harassment thresholds for marine mammals (table 7).

Table 7 – Calculated Distances to Level A Harassment and Level B Harassment Isopleths for Pile Driving and Removal

Structure and Pile Parameters	Method[a]	Distance to Level A Harassment Isopleth (m)					Level B Harassment Zones (m)[b]
		Humpback Whales	Killer Whales	Harbor Porpoise	Harbor Seals	Steller Sea Lions	
Pile Removal							
10”-16” Timber piles (All relevant structures)	V	27.1	10.4	22.1	34.9	11.7	6,309.6
Mooring Dolphin (24" steel pipe piles)	V	26.1	10.0	21.3	33.6	11.3	7,356.4
Mooring Dolphin (30" steel pipe piles)	V	41.3	15.9	33.8	53.2	17.9	11,659.1
Temporary Piles							
Template Construction Piles (24” steel pipe piles)	V	65.7	25.2	53.7	84.6	28.5	7,356.4
New Pile Installation							

Mooring and Breasting Dolphins (30" steel pipe piles)	V	65.6	25.2	53.6	84.4	28.4	11,659.1
	I	998.2	127.4	1,544.7	886.8	330.5	1,000
Approach and Main Docks (24" steel pipe piles)	V	31.6	12.1	25.8	40.7	13.7	7,356.4
	I	710.1	90.6	1,098.9	630.9	235.1	1,000
Abutment (24" steel pipe piles)	V	41.4	15.9	33.8	53.3	17.9	7,356.4
	I	710.1	90.6	1,098.9	630.9	235.1	1,000
Fender Piles (16" steel pipe piles)	V	54.2	20.8	44.3	69.8	23.5	7,356.4
	I	522.4	66.6	808.3	464	173	464.2
Fender Piles (24" steel pipe piles)	V	48	18.5	39.2	61.8	20.8	7,356.4
	I	628.8	80.2	973.2	558.7	208.2	1,000
Fuel Line Support Piles (16"	V	54.2	20.8	44.3	69.8	23.5	7,356.4

steel pipe piles)	I	684.5	87.3	1,059.2	608.1	226.7	464.2

[a] Installation methods include vibratory pile driving (V) and impact pile driving (I).
[b] These isopleths are truncated by land at approximately 3,550 m during high tide and approximately 2,230 m at low tide.

Marine Mammal Occurrence

In this section, we provide information about the occurrence of marine mammals, including density or other relevant information, which will inform the take calculations. Available information regarding marine mammal occurrence in the project area includes monitoring data, previous monitoring reports, and consultation with local researchers and marine professionals. Occurrence estimates for each species factor in historic occurrence data, seasonality, and estimated group size in Gastineau Channel, as described below. Section 6 of PM's application provides additional information regarding literature and sources cited.

Humpback whales are common in southeast Alaska, especially during the summer, but they rarely transit through Gastineau Channel, with only occasional sightings (PND Engineers, 2026). During monitoring conducted by previous IHA holders, sightings either did not occur or were rare (City of Borough of Juneau (CBJ), Docks & Harbors, 2018; CBJ, Docks & Harbors, 2020; CBJ, Docks & Harbors, 2024; Sailfin Marine Observing & Consulting, LLC, 2021; Uchytil, Michrowski, and Easterly, 2020). However, anecdotal reports indicate humpback whales do intermittently pass through the project area near downtown Juneau (PND Engineers, 2026). NMFS estimates three individual humpback whales would occur per month in the Level B harassment zone.

Killer whales occasionally occur in Gastineau Channel. Killer whale sightings in the project area reported in Happy Whale include 2019 and 2020 sightings of four and seven individuals, respectively, followed by sightings of a single individual near the Juneau-Douglas Bridge in March 2021 and another sighting of seven individuals in May 2021 (PND Engineers, 2026). NMFS reviewed eight Protected Species Observer (PSO) monitoring reports from the Juneau area (including Auke Bay, north of the Gastineau Channel) from 2019-2024. Three out of the eight reports included sightings of killer whales. Over a collective 254 days of monitoring, PSOs observed six groups of killer whales (group sizes ranged from two to six) for a total of 25 killer whales, or approximately 0.1 whales per day (25 whales/254 days or 3 whales per month). The maximum group size among anecdotal and monitoring reports was 7 individuals. Recognizing the frequency of occurrence is variable and killer whales can be present more frequently in summer for which data is lacking, NMFS estimates one group of seven individuals would occur per month (or more than one group of a smaller number of individuals) in the Level B harassment zone.

Sightings of harbor porpoises near downtown Juneau are relatively rare, although there are occasional reports of groups of two to four animals in Gastineau Channel. In September of 1992, the National Marine Mammal Laboratory Harbor Porpoise Vessel observed two harbor porpoises in Gastineau Channel southeast of downtown Juneau near the community of Thane (Global Biodiversity Information Center (GBIF) 2025). PSOs monitoring during construction of the Downtown Juneau Waterfront Improvements Project in February 2020 detected a group of four harbor porpoises (Uchytil, Michrowski, and Easterly, 2020). No harbor porpoises were sighted during marine mammal monitoring for the Aurora Harbor Rebuild – Phase II project between November 2017 and March 2018 (CBJ, Docks & Harbors, 2018). Alaska Fish and Wildlife News describes observations of a pair of harbor porpoises near the Juneau-Douglas Bridge in February 2024 (ADF&G, 2024). NMFS estimates one group of four individuals per month would occur in the Level B harassment zone.

Although rare near downtown Juneau, SSL sightings do occur regularly in Gastineau Channel. The Douglas Island Pink and Chum, Inc. (DIPAC) salmon hatchery is located along the Gastineau Channel, approximately 5.5 km (3.4 mi) northwest of downtown Juneau. DIPAC staff noted that in the summer (July through September) they see one to two SSLs per day in the water near the hatchery. Outside of those months, staff estimate they only see one to two SSLs for the remainder of the year (PND Engineers, 2026). During marine mammal monitoring over 58 days for the Downtown Juneau Waterfront Improvements Project in 2020, PSOs sighted a group of eight SSLs in February; no other SSLs were reported from December through the project completion in April (Uchytil, Michrowski, and Easterly, 2020). SSLs were observed on three occasions during monitoring for the Aurora Harbor Rebuild – Phase II project: a single adult in November; a group of three in December; and a single adult in February. The group of three SSLs was observed milling near the mouth of Kowee Creek just north of the Juneau-Douglas Bridge (CBJ, Docks & Harbors 2018). PSOs monitoring during a dredging project in December 2024, noted a single adult female traveling northwest in the Gastineau Channel near DIPAC; no other SSLs were observed in the area during the project (City & Borough of Juneau, Docks and Harbors, 2025). Given the proximity of the PM project area to DIPAC, NMFS estimates that two individuals per day would occur in the Level B harassment zone.

Harbor seals are one of the most frequently sighted marine mammals in the project area. During marine mammal monitoring for the Downtown Juneau Waterfront Improvements Project in 2020, harbor seals were present in the project area on most days, and the monitoring report suggests that a resident group of around 10-12 harbor seals uses Gastineau Channel in the winter (Uchytil, Michrowski, and Easterly 2020). During marine mammal monitoring for the Aurora Harbor Rebuild – Phase II Project between November 2017 and March 2018, 466 harbor seals were sighted over approximately 273 observation hours (CBJ, Docks & Harbors 2018). PSOs sighted a total of 17 harbor seals over approximately 32 of monitoring during the Aurora Harbor Rebuild – Phase III project in December 2023 through February 2024 (CBJ, Docks & Harbors, 2024). All sightings were of single individuals, except for one sighting of a pair (CBJ, Docks & Harbors, 2024). A total of 26 harbor seals were observed over 12.5 hours of monitored construction for the Harris Harbor Pile Driving project in February 2021. PSOs for the project note that these sightings were likely of the same few individuals and estimated that there were approximately three to five individual resident harbor seals in the project area in Harris Harbor (Sailfin Marine Observing & Consulting, LLC. 2021). Harbor seals haul out on the shoals near DIPAC (Alaska Fisheries Science Center [AFSC] 2025). This area is not known to be a key haulout for harbor seals; however, moderate numbers of seals move up Gastineau Channel toward this haulout during hatchery releases. Using marine mammal monitoring data collected during construction of previous projects near downtown Juneau, PM calculated the average number of harbor seals sighted per day across the observation periods (n=18). Based on PM's calculation, NMFS estimates 18 harbor seals per day would occur in the Level B harassment zone.

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization.

Estimated take was calculated based on either daily or monthly occurrence estimates for each species, using the following formulas:

Estimated take (daily) = group size x groups per day x days of pile driving; and

Estimated take (monthly) = group size x groups per month x months of pile driving activity, where one month is a 30-day period

The equation for daily estimated take was used for species whose occurrence was "common" and therefore had a daily occurrence estimate (harbor seals, Steller sea lions)). The equation for monthly estimated take was used for all other species. The estimated take value was rounded to the nearest whole number at the end of the calculation.

While NMFS expects take to be primarily by Level B harassment, PM requested, and NMFS is proposing to authorize take by Level A harassment (AUD INJ) for three species: harbor porpoise, harbor seal, and Steller sea lion.

NMFS does not anticipate that harbor porpoises would incur AUD INJ incidental to PM's construction activities. Harbor porpoises are behaviorally sensitive species, and it is well documented they exhibit strong avoidance reactions to noise such as pile driving. It is unlikely that a harbor porpoise would occur and remain within the Level A harassment zone for a long enough duration to incur AUD INJ. However, PM requested take of harbor porpoise by Level A harassment, citing the following reasons. For impact pile driving activities, PM is proposing a 300-m shutdown zone that is smaller than the largest Level A harassment zones which, depending on the pile type, range from 808 m to 1,545 m. Additionally, harbor porpoises are small, cryptic, and surface briefly, which can limit the probability of detection by PSOs at distances greater than a few hundred meters, particularly when sighting conditions are suboptimal (*e.g.*, glare, wave chop, reduced light). Although AUD INJ is not anticipated, PM requested, and therefore, NMFS proposes to authorize take by Level A harassment of 1 harbor porpoise per month over the 3 months that project may occur, for a total of 3 takes by Level A harassment).

For harbor seals, the proposed 25-m shutdown zone for impact pile driving is small compared to the Level A harassment zones, which range from 525 m to 1,000 m. PM anticipates, and NMFS concurs, that harbor seals could enter the Level A harassment zone and remain in the zone for a long enough duration to incur PTS. As indicated in table 6, impact pile driving would be conducted on 47 of the 81 (*i.e.*, 58 percent) in-water construction days. Thus, PM assumed that 58 percent of the total estimated take (n=1,458) could be by Level A harassment (n=846) and the remainder of the estimated takes would be by Level B harassment (n=612). Given impact pile driving will be intermittent throughout the day, harbor seals would likely have auditory recovery time following any exposure. However, to avoid underestimating the potential for AUD INJ, NMFS is proposing to authorize 846 takes by Level A harassment.

PM requested authorization of several instances of take by Level A harassment for SSLs due to the species' crypticity, potentially high abundance during the construction period, and the project's proximity to foraging habitat. SSLs can be difficult to detect in water because they surface briefly and provide only a small surface expression. Given PM's construction schedule, project activities could overlap peaks in SSL abundance (*i.e.*, during the salmon run). PM's proposed shutdown zones are equal to or larger than the Level A harassment zones, thus NMFS anticipates that take by Level A harassment of SSLs is unlikely. However, PM requested, and NMFS is proposing to authorize, take of one SSL by Level A harassment per month (three takes by Level A harassment total) in the event that an SSL enters, and remains unobserved within, the Level A harassment zone for a long enough duration to incur AUD INJ before a shutdown occurs.

No Level A harassment is anticipated for killer whales or humpback whales. Both species are large bodied with pronounced external blows and are, thus, more easily detected by PSOs. Additionally, the proposed shutdown zones for each species are equal to or exceed the Level A harassment zones for the relevant hearing group.

Table 8 summarizes take by both Level A harassment (AUD INJ) and Level B harassment proposed to be authorized, as well as estimated takes as a percentage of stock abundance.

Table 8 – Summary of the Proposed Take for JNU Rock Dump Fuel Terminal Reconstruction Project

Species	Stock	Abundance	Level A harassment	Level B harassment	Total	Percentage of total stock proposed for authorization[1]
Humpback whale[2]	Hawaii	11,278	0	8	8	<1
Killer whale[3]	Eastern North Pacific Alaska resident	1,920	0	21	21	1.1

	Gulf of Alaska/Aleutian Islands/Bering Sea Transient	587				3.6
	Eastern North Pacific Northern Resident	302				7
	West Coast Transient	349				6
Harbor porpoise	Northern Southeast Alaska Inland Waters	1,619	3	8	11	0.7
Steller sea lion[4]	Western	49,837	0	2	2	0
	Eastern	36,308	3	159	162	0.4
Harbor seal	Lynn Canal/Stephens Passage	13,388	846	612	1,458	10.9

[1] Percent of stock refers to combined take by both Level B harassment and Level A harassment (where requested).
[2] 98 percent of humpback whales in the project area are expected to be from the Hawai'i stock and 2 percent from the Mexico-North Pacific stock. Thus, of the low number of total estimated takes for humpback whales (n=8), this equates to 7.84 and 0.16 estimated takes of humpback whales from the Hawai'i and Mexico-North Pacific stocks, respectively. After applying standard rounding, NMFS is not proposing to authorize take of the Mexico-North Pacific stock of humpback whales.
[3] Scientific data is not available to determine the likelihood of each killer whale stock in PM's proposed project area, and the stocks cannot be differentiated in the field. When calculating the percentage of stock, NMFS assumes all takes may occur to each killer whale stock.
[4] SSL DPS attribution: 98.6 percent Eastern DPS and 1.4 percent Western DPS.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat, as well as subsistence uses. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, and impact on operations.

The mitigation requirements described in the following were proposed by PM in its adequate and complete application or are the result of subsequent coordination between NMFS and PM. PM has agreed that all of the mitigation measures are practicable. NMFS has fully reviewed the specified activities and the mitigation measures to determine if the mitigation measures would result in the least practicable adverse impact on marine mammals and their habitat, as required by the MMPA, and has determined the proposed measures are appropriate. NMFS describes these below as proposed mitigation requirements and has included them in the proposed IHA.

In addition to the measures described later in this section, PM would follow these general mitigation measures:

• Ensure that construction supervisors and crews, the marine mammal monitoring team, and relevant staff are trained prior to the start of all construction activities, so that responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work;

• Employ PSOs and establish monitoring locations as described in the Protected Species Monitoring and Mitigation Plan (PSMMP). PM must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions; and

• PM also would abide by the reasonable and prudent measures and terms and conditions of a Biological Opinion and Incidental Take Statement, if issued by NMFS, pursuant to Section 7 of the ESA.

Additionally, the following mitigation measures apply to PM’s in-water construction activities.

Establishment of Clearance and Shutdown Zones

PM proposed and NMFS would require the establishment of the clearance and shutdown zones identified in table 9 for all pile driving activities. The purpose of a clearance zone is to prevent potential instances of auditory injury and more severe behavioral disturbance to the maximum extent practicable by delaying the commencement of pile driving if marine mammals are detected within certain pre-defined distances from the pile being installed. The purpose of a shutdown is to prevent a specific, acute impact, such as auditory injury or more severe behavioral disturbance, by halting the activity. Additionally, to avoid unauthorized takes, PM would delay an activity or shut down in the event that a species for which take is not authorized or for which take has been reached is observed within or entering any designated harassment zone. If pile driving activities are delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the clearance and shutdown zones indicated in table 9 or 15 minutes have passed without re-detection of the animal.

If a marine mammal comes within 10 meters of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction.

In general, the clearance and shutdown zones represent the calculated Level A harassment distance rounded up for ease of implementation (table 9). However, the proposed IHA includes shutdown zones that are smaller than the Level A harassment zones (table 7) for harbor porpoises (300-m shutdown zone) and harbor seals (25-m shutdown zone) due to detectability concerns (*i.e.*, both species are cryptic). In addition, harbor seals are frequently observed in close proximity to project sites, sometimes approaching active pile-driving sites (*e.g.*, CBJ, 2019). Therefore, PM asserts, and NMFS concurs, that a larger mitigation zone for harbor seals would not be practicable due to the potential for frequent delays or shutdowns. For both species, NMFS is proposing to authorize take by Level A harassment to account for the fact that the species-specific proposed shutdown zone is smaller than the maximum Level A harassment zone.

Table 9 – Proposed Shutdown Zones (m) and Level B harassment Zones During Activities for the JNU Rock Dump Fuel Terminal Reconstruction Project

Structure and Pile Parameters	Installation Method[1]	Shutdown Zones (m)							Level B Harassment Zones (m)[3]
		Humpback Whales	Killer Whales	Steller Sea Lions	Harbor Porpoise[2]		Harbor Seals[2]		
					Reduced	Full	Reduced	Full	
Pile Removal									
10"-16" Timber Piles (All Relevant Structures)	V	30	15	15	25	25	25	35	6,310
Mooring Dolphin (24" Steel Pipe Piles)	V	30	10	15	25	25	25	35	7,360
Mooring Dolphin (30" Steel Pipe Piles)	V	45	20	20	35	35	25	55	11,660
Temporary Piles									
Template Construction Piles (24" Steel Pipe Piles)	V	70	30	30	55	55	25	85	7,360
New Pile Installation									
Mooring and Breasting Dolphins (30" Steel Pipe Piles)	V	70	30	30	55	55	25	85	11,660
	I	1,000	130	335	300	1,545	25	890	1,000

Approach and Main Docks (24" Steel Pipe Piles)	V	35	15	15	30	30	25	45	7,360
	I	715	95	240	300	1,100	25	635	1,000
Abutment (24" Steel Pipe Piles)	V	45	20	20	35	35	25	55	7,360
	I	715	95	240	300	1,100	25	635	1,000
Fender Piles (16" Steel Pipe Piles)	V	55	25	25	45	45	25	70	7,360
	I	525	70	175	300	810	25	465	470
Fender Piles (24" Steel Pipe Piles)	V	50	20	25	40	40	25	65	7,360
	I	630	85	210	300	975	25	560	1,000
Fuel Line Support Piles (16" Steel Pipe Piles)	V	55	25	25	45	45	25	70	7,360
	I	685	90	230	300	1,060	25	610	470

[1] Installation methods include vibratory pile driving (V) and impact pile driving (I).
[2] PM would implement reduced shutdown zones for harbor porpoises and harbor seals until the species-specific number of takes by Level A harassment NMFS is proposing to authorize has been met, after which PM would implement a full shutdown zone that is equal to or greater than the maximum Level A harassment zone.
[3] These isopleths are truncated by land at approximately 3,550 m during high tide and approximately 2,230 m at low tide.

Pre- and Post-Activity Monitoring

Monitoring would take place from 30 minutes prior to initiation of pile driving (pre-start clearance monitoring) through 30 minutes post-completion of pile driving. In addition, monitoring for 30 minutes would take place whenever a break in the specified activity (*i.e.*, impact or vibratory pile driving) of 30 minutes or longer occurs. Pre-start clearance monitoring would be conducted during periods of visibility sufficient for PSOs to determine that the clearance zones indicated in table 9 are clear of marine mammals. Pile driving may commence following 30 minutes of observation when the determination is made that the clearance zones are clear of marine mammals.

Soft Start

PM would use soft start procedures for impact pile driving to provide additional protection to marine mammals by issuing a warning and/or giving them a chance to leave the area before the hammer operates at full capacity. Soft start required contractors to provide an initial set of three strikes as reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. This soft start would be implemented at the start of each day's impact pile driving and at any time following cessation of this activity for a period of 30 minutes or longer within a day.

Bubble Curtains

PM has not proposed to use a bubble curtain during impact pile driving due to limited effectiveness of the bubble curtains due to the strong tides in the area and economic impracticability. In general, bubble curtains reduce noise levels near the source, minimizing exposure level. However, for this project, most of the piles are located within the intertidal zone, and thus a substantial number of piles will be installed above water or with the limits of the bubble curtain above the water surface preventing the bubble curtains from being effective. In addition, bubble curtains would be cost prohibitive and would prevent the project from going forward. For these reasons, PM has determined that the use of a bubble curtain is not practicable, and NMFS agrees.

NMFS conducted an independent evaluation of the proposed measures and has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, areas of similar significance, and on the availability of such species or stock for subsistence uses.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

• Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);

• Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3)

co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

• Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;

• How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;

• Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and

Mitigation and monitoring effectiveness.

The monitoring and reporting requirements described in the following were proposed by PM in its adequate and complete application and/or are the result of subsequent coordination between NMFS and PM. PM has agreed to the requirements. NMFS describes these below as requirements and has included them in the proposed IHA.

Proposed Monitoring

A minimum of two PSOs would be on duty during all pile-driving activities. All PSOs must be NMFS-approved. PSOs would be independent of the activity contractor (for example, employed by a subcontractor) and have no other assigned tasks during monitoring periods. At least one PSO would have prior experience performing the duties of a PSO during an activity pursuant to a NMFS issued Incidental Take Authorization (ITA) or Letter of Concurrence (LOC). Other PSOs may substitute other relevant experience (including relevant Alaska Native traditional knowledge), education (degree in biological science or related field), or training for prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization. Where a team of three or more PSOs is required a lead observer or monitoring coordinator would be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued ITA or LOC.

PSOs will be positioned at the best practicable vantage points, taking into consideration security, safety, access, and space limitations. Observer locations must be identified that (1) have an unobstructed view of the work being conducted and (2) unobstructed view of all the water within the Level A harassment zone and as much of the Level B harassment zone as possible. Potential observation locations are depicted in Figure 1 of PM's PSMMP. Optimal observation locations will be selected based on visibility and the type of work occurring.

Reporting

PM would submit a draft report on all construction activities and marine mammal monitoring results to NMFS within 90 calendar days of the completion of monitoring, or 60 days prior to the requested issuance of any subsequent IHAs or similar activity at the same location, whichever comes first. PM will provide a final report to NMFS within 30 days following receipt of any NMFS' comments on the draft report. The information required to be collected and reported to NMFS is included in the draft IHA available at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*. In summary, the report would include, but not be limited to, information regarding activities that occurred, marine mammal sighting data, and whether mitigative actions were taken or could not be taken. PM would also be required to submit reports on any observed injured or dead marine mammals. If the death or injury was clearly caused by a specified activity, the PM would immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. PM would not resume its activities until notified by NMFS.

Specific proposed monitoring and reporting requirements can be found in the draft IHA found at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analysis applies to all species listed in table 2 given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status, or structure of any of these species or stocks that would lead to a different analysis for this activity.

Impact and vibratory pile driving and removal have the potential to disturb or displace marine mammals and may result in take in the form of Level B harassment for all species and stocks in table 2 and Level A harassment for harbor porpoises, harbor seals, and SSLs. Potential takes could occur if individuals of these species are present in Level B harassment identified above when these activities are underway. PM would implement mitigation measures designed to reduce the potential for and severity of harassment on the affected marine mammal species and stocks during the specified activities.

Given the nature of PM's proposed activities, NMFS does not anticipate serious injury or mortality, even in the absence of required mitigation. Take by Level A harassment is proposed for harbor porpoises, harbor seals, and SSLs to account for the potential that an animal could enter and remain in the Level A harassment zone unnoticed for a duration long enough to be taken by Level A harassment. Any take by Level A harassment is expected to arise from, at most, a small degree of AUD INJ because animals would need to be exposed to higher levels and/or longer duration than are expected to occur here in order to incur any more than a small degree of AUD INJ. Further, PTS would only occur within the frequency range of the source (*i.e.*, impact pile driving) which does not cover any species complete hearing range. For most species, the frequency range of the noise produced by the specified activities is outside their primary hearing range. Additionally, some subset of the individuals that are behaviorally harassed could also simultaneously incur some small degree of TTS for a short duration of time. Because of the small degree anticipated, any AUD INJ or TTS potentially incurred here is not expected to adversely impact individual fitness, let alone annual rates of recruitment or survival.

For all species and stocks, take is expected to occur within a limited, confined area (adjacent to the project site) of the species' range, including Southeast Alaska. The intensity and duration of take by Level A harassment and/or Level B harassment would be minimized through the proposed mitigation measures described herein. Further, the number of take proposed for each species is small when compared to stock abundance.

Behavioral responses of marine mammals to pile removal and installation at the JNU Rock Dump Fuel Terminal are expected to be mild, short-term, and temporary. Marine mammals within the Level B harassment zones may not show any visual cues that they are disturbed by activities, or they may become alert, avoid the area, leave the area, or display other mild responses that are not observable, such as changes in vocalization patterns. Given that pile removal and installation activities would only occur on a limited number of days each year, often on non-consecutive days, any harassment would be temporary. Additionally, many of the species present in the Gastineau Channel would be present only for part of the year, based on seasonal patterns or during active transit between other habitats. These species would be exposed to even shorter periods of noise-generating activity, further decreasing the impacts.

Most likely, during the specified activities, individuals are expected to move away from the sound source until the source ceases. An avoidance response is most likely to occur if an animal is in close proximity to a source, most notably impact pile driving. At distance, the severity of any behavioral response is likely to be diminished from all of the specified activities. It is possible that avoidance or other behavioral responses do not occur, especially for non-impulsive sources such as vibratory pile removal and driving, given marine mammals in the Juneau area are consistently exposed to anthropogenic noise sources like vessel traffic. Regardless, NMFS assumes animals disturbed by project sounds would be expected to avoid the area and use nearby higher-quality habitats.

The potential for harassment is minimized through the implementation of the proposed mitigation measures. The use of shutdown and clearance zones reduce the likelihood of incurring AUD INJ. During impact driving, implementation of soft start procedures shall be required, reducing possibility for injury. Through the use of soft start during impact pile driving, marine mammals are expected to move away from a disturbing sound source prior to it becoming potentially injurious.

Any impacts on prey that would occur during in-water construction would have at most short-term effects on foraging of individual marine mammals, and likely no effect on the populations of marine mammals as a whole. Therefore, effects on marine mammal prey during the construction are expected to be minimal and, therefore, are unlikely to cause substantial effects on marine mammals at the individual or population level.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the reproduction or survival of any individual, much less the stocks' annual rates of recruitment or survival. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrated that the potential effects of the specified activities would have only short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and would, therefore, not result in population-level impacts.

For humpback whales, the inland waters of Southeast Alaska are a seasonal feeding BIA from May through September (Wild *et al.*, 2023). However, the portion of Gastineau Channel near the project area is not included in the feeding BIA, thus, the ensonified area from PM's proposed activities would not overlap with important foraging habitat. We do not expect PM's proposed construction to have any effect on humpback whales' ability to forage.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- Any Level A harassment is anticipated to be slight AUD INJ, including slight PTS of a few decibels within the lower frequencies associated with pile driving and not encompassing a species' full hearing range;
- The anticipated incidents of Level B harassment would result in, at worst, temporary modifications in behavior or a small degree of TTS that would resume to baseline at the cessation of activities or as animals move away from the source;
- The project area is located in a highly industrialized and commercial area; therefore, species taken are likely acclimated to anthropogenic activities and behavioral reactions are expected to be minor;
- Take could occur within an exceedingly small area affected by the specified activity relative to the overall habitat ranges of all species, and it does not include any rookeries nor does it overlap any known BIAs or ESA-designated critical habitat;
- Effects on species that serve as prey for marine mammals from the activities are primarily expected to be short-term and, therefore, any associated impacts on marine mammal feeding are not expected to result in significant or long-term consequences for individuals, or to accrue adverse impacts on their populations;
- The proposed mitigation measures, such as soft starts for impact pile driving and shutdown zones, are expected to reduce the effects of the specified activity on marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under section 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers (see 86 FR 5322, January 19, 2021). Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities. As previously stated, no mortality or serious injury has been requested, nor is it anticipated to occur from the activities described herein.

The number of instances of take for each species or stock proposed for authorization are included in table 8. Our analysis shows that for all species with available population abundance estimates, less than one-third of the best available population abundance estimate of each stock could be taken by harassment incidental to the proposed construction.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) that is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas; (ii) directly displacing subsistence users; or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and (2) that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Alaska Natives have traditionally harvested subsistence resources, including sea lions and harbor seals, in Southeast Alaska. Since surveys of harbor seal and sea lion subsistence harvest in Alaska began in 1992, there have been declines in the number of households hunting and harvesting pinnipeds in Southeast Alaska while the number of household hunting and harvesting sea lions has remained relatively constant at low levels (Wolfe *et al*. 2013). Subsistence harvest data for the Lynn Canal/Stephens Passage stock indicates an average annual harvest in the years 2004-2008 of 69 harbor seals; in 2011, 42 seals were harvested, and 24 seals were harvested in 2012 (summarized in Muto *et al*. 2016 from Wolfe *et al*. 2013). In 2012, the community of Juneau had an estimated subsistence take of zero SSL (Wolfe *et al*. 2013).

The ADF&G has designated the area around Juneau, including ensonified waters from the project, a non-subsistence area, defined as an area where dependence upon subsistence (customary and traditional uses of fish and wildlife) is not a principal characteristic of the economy, culture, and way of life (AS 16.05.258(c)). Regardless, the impact of the project on marine mammals is expected to be primarily limited to mild behavioral reactions (*e.g.*, avoidance during pile activities, increased swim speeds, or cessation of vocalizations) such that it would not affect their availability for subsistence use.

Given all of this information, NMFS has preliminarily determined that authorizing the take requested by PM is not likely to adversely affect the availability of any marine mammal species/stocks that would traditionally be used for subsistence purposes or would affect any subsistence harvest.

- The proposed construction activities are spatially localized within an existing waterfront development wherein marine mammals have become acclimated to human activity;
- The proposed activities are temporary in nature;

PM would implement mitigation measures that minimize any harassment to marine mammals in the action area, including traditionally harvested species;

- NMFS expects that most of the effects on marine mammals would not rise above behavioral impacts (*i.e.,* Level B harassment) and would be temporary in nature and any AUD INJ (*i.e.,* Level A harassment) that may occur would be a slight threshold shift and would be limited to a few instances of take; and
- No serious injury or mortality is expected or proposed to be authorized.

For these reasons, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from authorizing the requested take that may occur incidental to PM's specified activities.

Endangered Species Act

Section 7(a)(2) of the ESA of 1973 (16 U.S.C. 1531 *et seq*.) requires that each Federal agency ensures 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 designated critical habitat. To ensure ESA compliance for the issuance of incidental take authorizations, NMFS consults internally whenever we propose to authorize take for ESA-listed species, in this case with the NMFS Alaska Regional Office (AKRO).

NMFS Office of Protected Resources (OPR) is proposing to authorize take of the western stock of Steller sea lions, which are listed under the ESA. OPR has requested initiation of section 7 consultation with AKRO for the issuance of this IHA. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to PM for conducting construction in Juneau, AK, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed construction. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, 1-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the **Description of Proposed Activity** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activity** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond 1 year from expiration of the initial IHA).
- The request for renewal must include the following:

1. An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

2. A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

- Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: September 4, 2026.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2026-18458 Filed: 9/9/2026 8:45 am; Publication Date: 9/10/2026]