approximately 400 ft above ground level (AGL) for a majority of applications, but may also include operational altitudes up to as high as 100,000 ft mean sea level (MSL) for a few others.

The analysis in the EA is at a programmatic level, and it evaluates the potential environmental consequences from a broad perspective (*i.e.,* multiple types of small UAS platforms used to supplement, enhance, or replace a variety of existing methods of data collection). The EA specifies procedures for confirming that the impacts of site-specific actions considered pursuant to the proposed action are consistent with predictions for the proposed action.

In all applicable scenarios reviewed, the proposed action would yield no more than negligible impacts to any specific resource, and would not result in significant impacts overall.

The EA and FONSI were prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 *et seq.*) and Council on Environmental Quality implementing regulations (40 CFR parts 1500–1508), as well as NOAA's procedures for compliance with NEPA as specified in the Companion Manual to NOAA Administrative Order 216–6A.

David Holst,

Chief Financial Officer/Administrative Officer, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration.

[FR Doc. 2023–14951 Filed 7–13–23; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD031]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to City of Cordova Harbor Rebuild Project, Cordova, Alaska

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

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

SUMMARY: NMFS has received a request from the City of Cordova (Cordova) for authorization to take marine mammals incidental to the pile driving and removal activities over two years associated with the Cordova Harbor rebuild project in Cordova, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two incidental harassment authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on possible one-time, one-year renewals for each IHA 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 authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than August 14, 2023.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.wachtendonk@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: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.* In case of problems accessing these documents, please call the contact listed above.

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 *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities* 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: Rachel Wachtendonk, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct 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). Further, NMFS must prescribe the permissible methods of taking and 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 in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

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 NOAA Administrative Order 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.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On February 16, 2023, NMFS received a request from the City of Cordova for two IHAs to take marine mammals incidental to pile driving and removal activities associated with the City of Cordova, Cordova Harbor Rebuild project, in Cordova, Alaska, over the course of two years. Following NMFS' review of the application, The City of Cordova (Cordova) submitted a revised version on April 19, 2023. The application was deemed adequate and complete on May 12, 2023. Cordova's request for the first IHA is for take of marine mammals by Level B harassment and, for a subset of these species, Level A harassment. For the second IHA, Cordova is requesting take of only Steller sea lion (*Eumetopias jubatus*) and harbor seal (*Phocoena* phocoena) by Level A and Level B harassment. Neither Cordova nor NMFS expect serious injury or mortality to result from this activity and, therefore, IHAs are appropriate.

Description of Proposed Activity

Overview

Cordova proposes to replace existing structures in the Cordova Harbor in Cordova, Alaska. The purpose of this project is to remove old structures in the harbor and replace them with new structures which would improve the safety of the harbor and allow the harbor to better accommodate the commercial fishing industry. The City of Cordova is located in Orca Inlet within the Prince William Sound. Over the course of 2 years spanning September 2023–April 2024 and September 2024–April 2025, Cordova would use a variety of methods, including vibratory, impact, and down-the-hole (DTH) pile driving to remove existing piles and to install new ones. These methods of pile driving would introduce underwater sounds that may result in take, by Level A and Level B harassment, of marine mammals.

Dates and Duration

Cordova anticipates that the harbor rebuild project would occur over 2 years (phases). The in-water work window would last from September 2023 to April 2024 (Phase I) and September 2024 to April 2025 (Phase II), although pile driving/removal activities are only anticipated to take 433 hours over 170 days in Phase I and 148 hours over 88 days in Phase II. All in-water pile driving would be completed during daylight hours. The Phase I IHA would be valid from August 31, 2023 to August 30, 2024, and the Phase II IHA would be valid from August 31, 2024 to August 30, 2025.

Specific Geographic Region

The City of Cordova harbor is located southeast of Spike Island and west of downtown Cordova within the Orca Inlet in Prince William Sound, approximately 241 kilometers (km) (150 miles (mi)) southeast of Anchorage, Alaska. With a capacity of 711 vessels, the harbor is one of Alaska's largest single basin harbors and houses one of the largest commercial fishing fleets in the country. The timing of this work is planned to not interfere with the commercial fishing season. The depth of the harbor ranges from ~2.5 to 7 meters (m) (8 to 22 feet (ft)) in depth.

The harbor consists of two areas: the South Harbor and the North Harbor (see Figure 2 in the application for a detailed map). Phase I of this project would take place in the South Harbor while Phase II would take place in both North and South Harbor.

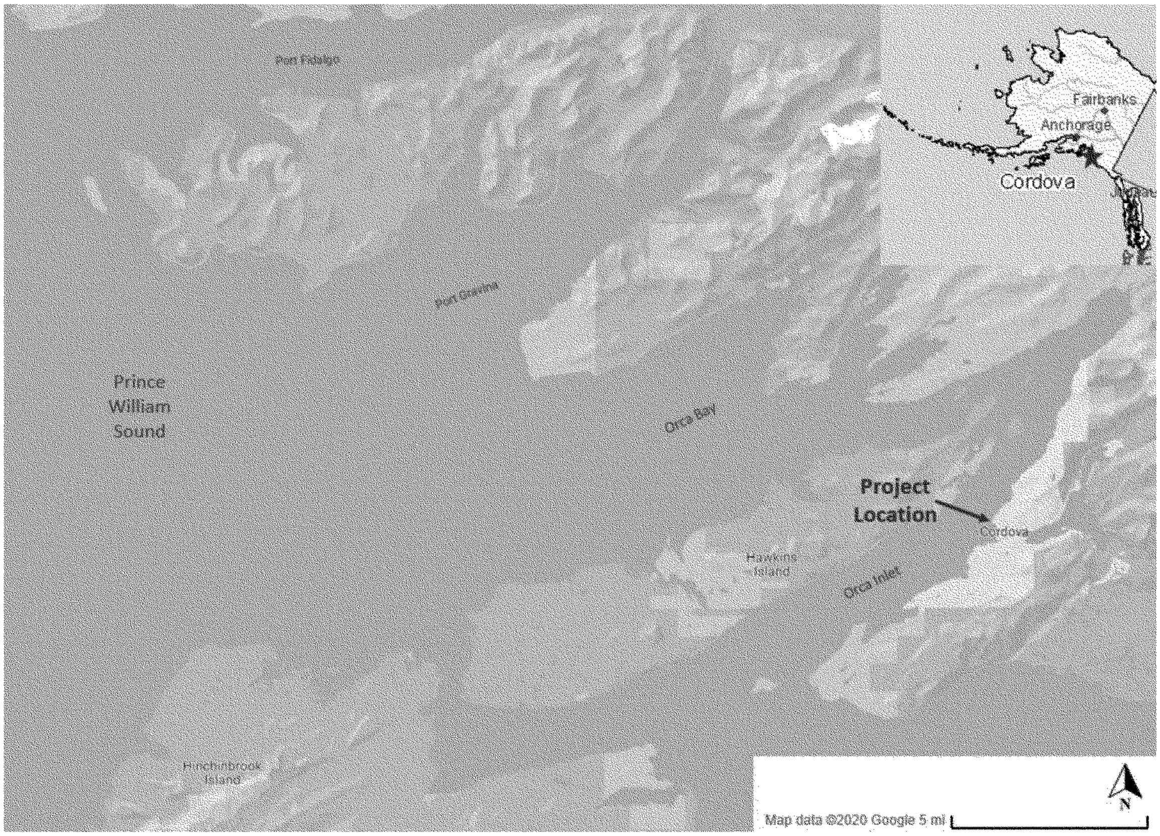

Figure 1 -- Project location

Detailed Description of the Specified Activity

The purpose of this project is to improve Cordova Harbor to offer safe vessel mooring and better accommodate the current and future commercial fishing industry and associated freight to support the local economy. Improvements would include replacing all the floats and gangways and adding a new drive-down floatplane and vessel service facility (drive-down dock) in the South Harbor. This project would not increase the number of slips in the harbor, but would provide safer access to the existing slips. An increase in vessel traffic is not expected as a direct result of the proposed project. This project would also include work that is not expected to result in take. During Phase I this would include the removal of walk floats, gangways, and a seaplane float. Additionally, new floats, gangways, access trestles, electrical service lighting, potable water service, fire suppression lines, and safety equipment would be installed in the South Harbor. During Phase II, the work not expected to result in take would be the installation of a bulkhead above the high tide line, a five-ton hydraulic crane, and a new boat launch ramp lane.

Installation of bulkheads in the North (Phase II) and South (Phase I) Harbor would involve gravel fill to be placed behind the bulkheads. Gravel fill deposition would produce a continuous sound of a relatively short duration, does not require seafloor penetration, and would not affect habitat for marine mammals and their prey beyond that already affected by installation of H-piles and sheet piles, discussed below. Further, placement of gravel fill would occur in a dry area behind the sheet piles, and placement would occur in a controlled manner so as not to compromise the newly installed piles. Dredging in the South Harbor during Phase I would involve the removal of 7,646 cubic meters (10,000 cubic yards) above the high tide line and therefore would not result in the take of marine mammals and it is not discussed further. During Phase II, approximately 16,820 cubic meters (22,000 cubic yards) of material would be removed below the high tide line by dredging in the North Harbor. A combination of the dredge soil and imported gravel would be used to fill in behind the bulkheads in both the North and South Harbor. While marine mammals may behaviorally respond in some small degree to the noise generated by dredging operations, given the slow, predictable movements of these vessels, and absent any other contextual features that would cause enhanced concern, NMFS does not expect Cordova's planned dredging to result in the take of marine mammals and it is not discussed further.

Phase I would involve the removal of existing piles, the installation and removal of temporary piles, and the installation of permanent piles in the South Harbor. During Phase I 130 timber (12 inch (in) diameter; 0.3 meters (m)) and 61 old steel (12 in diameter; 0.3 m) piles would be removed. Once the existing piles are removed, 155 16-in (0.4 m), 70 18-in (0.5 m), and 30 30-in (0.8 m) permanent steel piles would be installed. The installation and removal of 61 temporary 24-in (0.6 m) steel pipe piles would be completed to support permanent pile installation. Vibratory hammers, impact hammers, and DTH drilling would be used for the installation and removal of all piles (Table 1). Piles would be removed by dead-pull or vibratory methods. The installation and removal of temporary piles would be conducted using vibratory hammers. All permanent piles would be initially installed with a vibratory hammer. After vibratory driving, if needed, piles would be impacted into the bedrock with an impact hammer. For some piles, a DTH drill would be needed to drive piles the final few inches of embedment.

Phase II would involve the removal of existing piles, the installation and removal of temporary piles, and the installation of permanent piles in the North and South Harbor. During Phase II 268 12-in (0.3 m) timber piles would be removed. Then, 24 24-in (0.6 m) steel piles, 80 steel H-piles, and 80 steel sheet piles would be installed. The installation and removal of 31 temporary 24-in (0.6 m) steel pipe piles would be completed to support permanent pile installation. As in Phase I, vibratory hammers, impact hammers, and DTH drilling would be used for the installation and removal of all piles (Table 2). Piles would be removed by dead-pull or vibratory methods. The installation and removal of temporary piles would be conducted using vibratory hammers. All permanent piles would be initially installed with a vibratory hammer. After vibratory driving, if needed, piles would be impacted into the bedrock with an impact hammer. For some piles, a DTH drill would be needed to drive piles the final few inches of embedment.

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Table 1 --Summary of Pile Removal and Installation Activities for Phase I

	In-water pile driving							In-air pile driving			
	Perm Pile Removal		Temp Pile Installation	Temp Pile Removal	Perm Pile Installation			Temp Pile Installation	Temp Pile Removal	Perm Pile Installation	
Diameter of Piles (inches)	12	12	24	24	16	18	30	24	24	18	16 x 89
Pile Type	Timber	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel H
Total Number of Piles	130	61	61	61	155	70	30	70	70	70	140
Vibratory Pile Driving											
Total Quantity	130	61	61	61	155	70	30	70	70	70	140
Max No. Piles Vibrated Per Day	25	25	6	10	10	10	6	6	10	6	10
Vibratory Time Per Pile (minutes)	10	10	10	10	15	20	30	10	10	10	15
Vibratory Time Per Pile (hours)	4.2	4.2	1.0	1.7	2.5	3.3	3.0	1.0	1.7	1.0	2.5
Number of Days	5.2	2.4	10.2	6.1	15.5	7.0	5.0	11.7	7.0	11.7	14.0
Total Vibratory Time (hours)	21.7	10.2	10.2	10.2	38.8	23.3	15.0	11.7	11.7	11.7	35
Impact Pile Driving											
Total Quantity	-	-	-	-	73	35	20	-	-	35	70
Max No. Piles Impacted Per Day	-	-	-	-	6	6	6	-	-	4	6
Number Strikes Per Pile	-	-	-	-	240	240	360	-	-	180	150
Impact Time Per Pile (minutes)	-	-	-	-	20	20	20	-	-	20	20
Impact Time Per Pile (hours)	-	-	-	-	2.0	2.0	2.0	-	-	1.3	2.0
Number of Days	-	-	-	-	12.2	5.8	3.3	-	-	8.8	11.7
Total Impact Time (hours)	-	-	-	-	24.3	11.7	7.0	-	-	12	23
DTH Pile Driving											
Total Quantity	-	-	-	-	50	20	16	-	-	18	35
Max No. Piles Installed Per Day	-	-	-	-	4	4	4	-	-	4	5
Number Strikes Per Pile	-	-	-	-	54,000	54,000	54,000	-	-	2,700	40,500
Number Strikes Per Second	-	-	-	-	10	10	10	-	-	10	10
Total Drilling Time Per Pile (minutes)	-	-	-	-	90	90	90	-	-	60	80
Actual Drilling Time Per Pile (minutes)	-	-	-	-	75	75	75	-	-	45	60
Time Per Day (hours)	-	-	-	-	5	5	5	-	-	3	5
Number of Days	-	-	-	-	12.5	5.0	4.0	-	-	4.5	7.0
Total DTH Drilling Time (hours)	-	-	-	-	62.5	25.0	20.0	-	-	13.5	35

Table 2 --Summary of Pile Removal and Installation Activities for Phase II

	In-water pile driving					
	Perm Pile Removal	**Temp Pile Installation**	**Temp Pile Removal**	**Perm Pile Installation**		
Diameter of Piles (inches)	12	24	24	24	16 x 89	
Pile Type	Timber	Steel	Steel	Steel	Steel H	Steel Sheet
Total Number of Piles	268	31	31	24	80	80
Vibratory Pile Driving						
Total Quantity	268	31	31	24	80	80
Max No. Piles Vibrated Per Day	25	6	10	10	4	4
Vibratory Time Per Pile (minutes)	10	10	10	20	15	15
Vibratory Time Per Pile (hours)	4.2	1.0	1.7	3.3	1.0	1.0
Number of Days	10.7	5.2	3.1	2.4	20.0	20.0
Total Vibratory Time (hours)	44.7	5.2	5.2	8.0	20.0	20.0
Impact Pile Driving						
Total Quantity	-	-	-	10	32	32
Max No. Piles Impacted Per Day	-	-	-	4	4	4
Number Strikes Per Pile	-	-	-	20	20	20
Impact Time Per Pile (minutes)	-	-	-	20	20	20
Impact Time Per Pile (hours)	-	-	-	1.3	1.3	1.3
Number of Days	-	-	-	2.4	8.0	8.0
Total Impact Time (hours)	-	-	-	3.0	11.0	11.0
DTH Pile Driving						
Total Quantity	-	-	-	5	16	-
Max No. Piles Installed Per Day	-	-	-	2	3	-
Number Strikes Per Pile	-	-	-	54,000	54,000	-
Number Strikes Per Second	-	-	-	4	4	-
Total Drilling Time Per Pile (minutes)	-	-	-	150	150	-
Actual Drilling Time Per Pile (minutes)	-	-	-	60	60	-
Time Per Day (hours)	-	-	-	2	3	-
Number of Days	-	-	-	2.4	5.3	-
Total DTH Drilling Time (hours)	-	-	-	4.8	16.0	-

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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 of 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; *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 3 lists all species or stocks for which take is expected 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, that 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 serious injury and mortality 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' U.S. 2021 Alaska Marine Mammal SARs. All values presented in Table 3 are the most recent available at the time of publication (including from the draft 2022 SARs) and are available online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.*

TABLE 3—SPECIES LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES [1]

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [2]	Stock abundance (CV, N_{min}, most recent abundance survey) [3]	PBR	Annual M/SI [4]
Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Killer whale	*Orcinus orca*	Alaska Resident	-/-; N	1,920 (N/A, 1,920, 2019)	19	1.3
		Gulf of Alaska/Aleutian Islands/Bering Sea Transient.	-/-; N	587 (N/A, 587, 2012)	5.9	0.8
		AT1 Transient	-/D; N	7 (N/A, 7, 2019)	0.1	0
Family Phocoenidae (porpoises):						
Dall's porpoise	*Phocoenoides dalli*	Alaska	-/-; N	UND (UND, UND, 2015) [5]	UND	37
Order Carnivora—Pinnipedia						
Family Otariidae (eared seals and sea lions):						
Steller sea lion	*Eumetopias jubatus*	Western DPS	E/D; Y	52,932 (N/A, 52,932, 2019)	318	254
Family Phocidae (earless seals):						
Harbor seal	*Phoca vitulina*	Prince William Sound	-/-; N	44,756 (N/A, 41,776, 2015)	1253	413

[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/;* Committee on Taxonomy (2022)).

[2] Endangered Species Act (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 stock assessment reports online at: *www.nmfs.noaa.gov/pr/sars/.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable.

[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). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

[5] Population estimate of 13,110 based on surveys from western Prince William Sound, as abundance estimates for the Alaska stock are more than 8 years old and are no longer considered reliable (Muto *et al.,* 2022). This population estimate will be used for small numbers calculations.

As indicated above, all four species (with six managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species that could potentially occur in the proposed survey areas are included in Table 10 of the IHA application. While northern fur seal, Pacific white-sided dolphin, harbor porpoise, humpback whale, fin whale, minke whale, and gray whale have been documented in Prince William Sound, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. These species are all considered to be rare (no sightings in recent years) or very rare (no local knowledge of sightings within the project vicinity) within Orca Bay according to the Prince William Sound Science Center in Cordova (Prince William Sound Science Center 2022; Schinella 2022). Given the shallow depths of the waters surrounding Cordova Harbor, it would also be unusual for many of these species to enter the project area. The take of these species has not been requested nor is proposed to be authorized and these species are not considered further in this document.

Killer Whale

Killer whales have been observed in all the world's oceans, but the highest densities occur in colder and more productive waters found at high latitudes (NMFS 2016). They occur along the entire Alaska coast, in British Columbia and Washington inland waterways, and along the outer coasts of Washington, Oregon, and California (NMFS, 2016). The three stocks that are most likely to occur in Prince William Sound are the southern Alaska Resident stock, Gulf of Alaska/Aleutian Islands/Bering Sea Transient stock, and the AT1 Transient stock (Muto *et al.,* 2022).

There are three distinct ecotypes, or forms, of killer whales recognized: Resident, Transient, and Offshore. The three ecotypes differ morphologically, ecologically, behaviorally, and genetically. Both residents and transients are common in a variety of habitats and all major waterways, including protected bays and inlets. There does not appear to be strong seasonal variation in abundance or distribution of killer whales, but there was substantial variability between years (Dahlheim *et al.,* 2009). Spatial distribution has been shown to vary among the different ecotypes, with resident and, to a lesser extent, transient killer whales more commonly observed along the continental shelf, and offshore killer whales more commonly observed in pelagic waters (Rice *et al.,* 2017).

In the Gulf of Alaska, the offshore killer whale ecotype is found in pelagic waters off the Aleutian Islands to California and mainly prey on sharks; the resident ecotype (southern Alaska residents) ranges from Kodiak Island to Southeast Alaska and prefer to eat fish; and two different transient populations (Gulf of Alaska transients and AT1 transients) prefer marine mammals are most often found near the Hinchinbrook Entrance and Montague Strait (Myers *et al.,* 2021). A tagging study focused on resident killer whale movements in Prince William Sound found that killer whales' favored use areas were highly-seasonal and pod specific, likely timed with seasonal salmon returns to spawning streams (Olsen *et al.,* 2018).

With the exception of the AT1 Transient stock, the populations that are known to occur in Prince William Sound are not strategic or depleted under the MMPA. Long-term studies of pods belonging to the southern Alaska resident stock in the Gulf of Alaska indicate these populations are increasing at an estimated growth rate of approximately 3.4 percent (Matkin *et al.,* 2014). However, both resident and transient killer whales were significantly impacted by the 1989 Exxon Valdez Oil spill. Prior to the spill, the resident AB pod consisted of 36 members and from 1989 to 1990, 14 whales disappeared from the pod. The AB pod is considered recovering; however, due to slow reproduction rates only 28 individuals were observed in 2005 (Exxon Valdez Oil Spill Trustee Council 2021). The AT1 Transient stock also experienced high mortality following the oil spill, as 11 of the original 22 individuals disappeared between 1989 and 1992. The AT1 stock currently numbers only seven individuals (Muto *et al.,* 2021).

Results from the Olsen *et al.* (2018) satellite tagging surveys in Prince William Sound from 2006 to 2014 revealed several core use areas for resident killer whales based on pod and season. Most resident pods primarily concentrated at the southern end of Prince William Sound in Hinchinbrook Entrance during the summer and Montague Strait in the late summer and fall. The AD16 pod (estimated 9 animals) and AK pod (estimated 19 animals) were the most frequently observed in the northern glacial fjords of the sound (Muto *et al.,* 2022; Olsen *et al.,* 2018).

Additionally, a 27-year photo identification study in Prince William Sound and Kenai Fjords surveyed both populations of transient killer whales. The study found that the AT1 transients had higher site fidelity to the area, while the Gulf of Alaska transients had a higher exchange of individuals (Matkin *et al.,* 2012). Throughout the study, survival estimates for both populations was generally high, but there was significant population reduction in the AT1 transient after the Exxon Valdez oil spill (Matkin *et al.,* 2012). There was no detectable decline in the larger Gulf of Alaska transient population after the oil spill (Matkin *et al.,* 2012).

Communication with the Cordova Harbormaster and Prince William Sound Science Center scientists indicate that killer whales are occasionally observed in the deeper waters of Orca Inlet north of Cordova Harbor (Schinella 2022; Prince William Sound Science Center 2022).

Steller Sea Lion

Steller sea lions were listed as threatened range-wide under the ESA on November 26, 1990 (55 FR 49204). Steller sea lions were subsequently partitioned into the western and eastern Distinct Population Segments (DPSs; western and eastern stocks) in 1997 (62 FR 24345, May 5, 1997). The eastern DPS remained classified as threatened until it was delisted in November 2013. The western DPS (those individuals west of the 144° W longitude or Cape Suckling, Alaska) was upgraded to endangered status following separation of the DPSs, and it remains endangered today. There is regular movement of both DPSs across this 144° W longitude boundary (Jemison *et al.,* 2013) however, due to the distance from this DPS boundary, it is likely that only western DPS Steller sea lions are present in the project area. Therefore, animals potentially affected by the project are assumed to be part of the western DPS. Sea lions from the eastern DPS, are not likely to be affected by the proposed activity and are not discussed further.

Steller sea lions do not follow traditional migration patterns, but will move from offshore rookeries in the summer to more protected haulouts closer to shore in the winter. They use rookeries and haulouts as resting spots as they follow prey movements and take foraging trips for days, usually within a few miles of their rookery or haulout. They are generalist marine predators and opportunistic feeders based on seasonal abundance and location of prey. Steller sea lions forage in nearshore as well as offshore areas, following prey resources. They are highly social and are often observed in large groups while hauled out but alone or in small groups when at sea (NMFS 2022).

Steller sea lions are distributed throughout Prince William Sound, with patterns loosely correlated to aggregations of spawning and migrating prey species, particularly fish and cephalopod species (Womble 2005; Sinclair and Zeppelin 2002; Sinclair *et al.,* 2013). Steller sea lions may be found in and around Orca Inlet throughout the year and are frequently observed inside Cordova Harbor (Schinella 2022; Prince William Sound Science Center 2022). They are drawn to fish processing plants and high forage value areas such as anadromous streams. The Cordova area has several anadromous streams that support salmon species (Alaska Department of Fish and Game [ADF&G] 2022) and six Alaska Department of Environmental Conservation permitted seafood processing plant outfalls that also attract Steller sea lions (ADEC 2022). While the project action area is within designated Steller sea lion critical habitat, there are few essential physical and biological habitat features of critical habitat within in the action area. The nearest rookery to the proposed project is Seal Rocks (approximately 73 km northeast of project) off the coast of Hinchinbrook Island and the nearest major haulouts are Hook Point (36 kilometers northeast of project) and Cape Hinchinbrook (59 km northwest of project; NMFS 2016). However, given the small footprint and shallow depth of water in the project's action area, prey resources and foraging habitats in the action area are expected to be minimal.

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.*). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 4.

TABLE 4—MARINE MAMMAL HEARING GROUPS

[NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, *Cephalorhynchid, Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 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 are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.,* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section provides a discussion of the ways in which 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.

Description of Sound Sources

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far. The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.,* waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.,* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.,* vessels, dredging, aircraft, construction).

The sum of the various natural and anthropogenic sound sources at any given location and time—which comprise ''ambient'' or ''background'' sound—depends not only on the source levels (as determined by current weather conditions and levels of biological and shipping activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10–20 dB from day to day (Richardson *et al.,* 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction activities associated with the project would include vibratory pile removal, impact and vibratory pile installation, and Down-the-Hole (DTH) drilling. The sounds produced by these activities fall into one of two general sound types: impulsive and non-impulsive. Impulsive sounds (*e.g.,* explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (American National Standards Institute (ANSI) 1986; National Institute for Occupational Safety and Health (NIOSH) 1998; ANSI 2005; NMFS 2018a). Non-impulsive sounds (*e.g.,* aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with raid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998; NMFS 2018a). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.,* Ward 1997 in Southall *et al.,* 2007).

Three types of hammers would be used on this project: impact, vibratory, and DTH. Impact hammers operate by repeatedly dropping a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is 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 the sediment. Vibratory hammers produce significantly less sound than impact hammers. Peak sound pressure levels (SPLs) may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.,* 2009). Rise time is slower, reducing the probability and severity of injury, and sound energy is distributed over a greater amount of time (Nedwell and Edwards 2002; Carlson *et al.,* 2005).

A DTH hammer is essentially a drill bit that drills through the bedrock using a rotating function like a normal drill, in concert with a hammering mechanism operated by a pneumatic (or sometimes hydraulic) component integrated into the DTH hammer to increase speed of progress through the substrate (*i.e.,* it is similar to a ''hammer drill'' hand tool). The sounds produced by the DTH method contain both a continuous non-impulsive component from the drilling action and an impulsive component from the hammering effect. Therefore, we treat DTH systems as both impulsive and non-impulsive sound source types simultaneously.

The likely or possible impacts of Cordova's proposed activity on marine mammals involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of equipment and personnel; however, any impacts to marine mammals are expected to be primarily acoustic in nature. Acoustic stressors include effects of heavy equipment operation during pile driving and drilling.

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving or drilling is the primary means by which marine mammals may be harassed from the Cordova's specified activity. 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). In general, exposure to pile driving or drilling noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses such an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving or drilling noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.,* impulsive vs. non-impulsive), the species, age and sex class (*e.g.,* adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.,* 2004; Southall *et al.,* 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an 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 2018). The amount of threshold shift is customarily expressed in decibels (dB). A TS can be permanent or temporary. As described in NMFS (2018), 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), 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, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how an 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).

Permanent Threshold Shift (PTS)—NMFS defines PTS 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 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al.,* 1958, 1959; Ward 1960; Kryter *et al.,* 1966; Miller 1974; Ahroon *et al.,* 1996; Henderson *et al.,* 2008). PTS 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 PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS 2018).

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 2018). Based on data from cetacean TTS measurements (see Southall *et al.,* 2007), 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 (Schlundt *et al.,* 2000; Finneran *et al.,* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SELcum) in an accelerating fashion: At low exposures with lower SELcum, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SELcum, the growth curves become steeper and approach linear relationships with the noise 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 serious (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 a time when communication is critical for successful mother/calf interactions could have more serious 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). For cetaceans, published data on the onset of TTS are limited to the captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise (*Phocoena phocoena*), and Yangtze finless porpoise (*Neophocoena asiaeorientalis*), and for pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals (*Mirounga angustirostris*), and California sea lions (*Zalophus californianus*). These studies examine hearing thresholds measured in marine mammals before and after exposure to intense sounds. 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 at low frequencies, well below the region of best sensitivity, are less hazardous than those at higher frequencies, 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, 2019b). 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 (Finneran *et al.,* 2010; Kastelein *et al.,* 2014; Kastelein *et al.,* 2015a; Mooney *et al.,* 2009). This means that TTS predictions based on the total, cumulative SEL will overestimate the amount of TTS from intermittent exposures such as sonars and impulsive sources. Nachtigall *et al.* (2018) describe the 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, 2018).

Behavioral Harassment—Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. 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. 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. However, 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).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where sound sources are located. 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; Weilgart 2007). 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–C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

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. 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.

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.,* Seyle 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; Lankford *et al.,* 2005). 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. 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 (National Research Council (NRC), 2003), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar projects in the area.

Masking—Sound can disrupt behavior through masking, or interfering 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). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* pile driving, shipping, sonar, seismic exploration) in origin. 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. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.,* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked.

Airborne Acoustic Effects—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 sheltered proximity between the proposed project area and these haulout sites (outside of Orca Inlet). According to the Prince William Sound Science Center and the harbor master pinnipeds have not been observed to haul out on the breakwaters outside the harbor or on Spike Island facing the harbor. Therefore, take resulting solely from airborne sound is unlikely for the areas surrounding the harbor. There is a possibility that an animal could surface in-water, but with head out, within the area in which airborne sound exceeds relevant thresholds and thereby be exposed to levels of airborne sound that we associate with harassment. Any such occurrence on days with in-water pile driving activities would likely be accounted for in our estimation of incidental take from underwater sound. On days when pile driving is occurring on land immediately adjacent to the harbor, no take from underwater sound would occur. However, authorization of incidental take resulting from airborne sound for pinnipeds is warranted for days with only upland pile driving activities due to the potential for pinnipeds to be exposed while hauled out within the harbor or while swimming with their heads above the surface. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

Marine Mammal Habitat Effects

Cordova's construction activities could have localized, temporary impacts on marine mammal habitat and their prey by increasing in-water sound pressure levels and slightly decreasing water quality. However, its proposed location is within the current harbor footprint and is located in an area that is currently used by numerous commercial fishing and personal vessels. Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater and airborne sound. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During DTH drilling, impact, and vibratory pile driving, elevated levels of underwater noise would ensonify the project area where both fish and mammals occur and could affect foraging success. Additionally, marine mammals may avoid the area during construction; however, displacement due to noise is expected to be temporary and is not expected to result in long-term effects to the individuals or populations.

Temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are installed or removed. In general, turbidity associated with pile installation is localized to about a 25-ft (7.6 m) radius around the pile (Everitt *et al.,* 1980). 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 effects of turbidity, and any pinnipeds could avoid localized areas of turbidity. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

In-Water Construction Effects on Potential Foraging Habitat

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals as the project would not expand mooring capacity in Cordova Harbor, and no increases in vessel traffic in the area are expected as a result of this project. The total seafloor area likely impacted by the project is relatively small compared to the available habitat in Southcentral Alaska. Orca Inlet is included in the designated critical habitat for western Steller sea lions and these sea lions could experience a temporary loss of suitable habitat in the action area for 1 to 5 hours per day over 170 days during Phase I and 1 to 8.5 hours per day over 88 days during Phase II of construction if elevated noise levels associated with in-water construction results in their displacement from the area. However, the project would only impact the essential physical and biological features that make the area critical habitat for western Steller sea lions, such as good water quality, prey availability, or open space for transiting and foraging when the ensonified area extends beyond Cordova Harbor. The area already has elevated noise levels because of busy vessel traffic transiting through the area, and critical habitat impacts would not be permanent nor would it result long-term effects to the local population. No known rookeries or major haulouts would be impacted. Additionally, the total seafloor area affected by pile installation and removal is a small area compared to the vast foraging area available to marine mammals in the area. At best, the impact area provides marginal foraging habitat for marine mammals and fishes. Furthermore, pile driving at the project site would not obstruct movements or migration of marine mammals.

Avoidance by potential prey (*i.e.,* fish) of the immediate area due to the temporary loss of this foraging habitat is also possible. The duration of fish 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 by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity.

Effects on Potential Prey

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* crustaceans, cephalopods, fish, zooplankton, *etc.*). Marine mammal prey varies by species, season, and location. Here, we describe studies regarding the effects of noise on known marine mammal prey.

Fish 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 and Mann, 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 which 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 fish, although several are based on studies in support of large, multiyear bridge construction projects (*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.,* Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009).

SPLs of sufficient strength have been known to cause injury to fish and fish mortality. However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012a) showed that a TTS of 4–6 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.,* 2012b; Casper *et al.,* 2013).

The most likely impact to fish from pile driving activities at the project areas would be temporary behavioral avoidance of the area. The duration of fish avoidance of an area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated.

Construction activities, in the form of increased turbidity, have the potential to adversely affect forage fish in the project area. Forage fish form a significant prey base for many marine mammal species that occur in the project area. Increased turbidity is expected to occur in the immediate vicinity (on the order of 10 ft (3 m) or less) of 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 are expected to be minor or negligible.

In summary, given the short daily duration of sound associated with individual pile driving events and the relatively small areas being affected, pile driving activities associated with the proposed action are not likely to have a permanent adverse effect on any fish habitat, or populations of fish species. 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. Thus, we conclude that impacts of the specified activity 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 adverse impacts on their populations.

Estimated Take of Marine Mammals

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

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).

Authorized takes would primarily be by Level B harassment, as use of the acoustic sources (*i.e.,* vibratory or impact pile driving and DTH drilling) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for Dall's porpoise and harbor seals, due to the cryptic nature of these species in context of larger predicted auditory injury zones. Auditory injury is unlikely to occur for mid-frequency species and otariids, based on the likelihood of the species in the action area, the ability to monitor the entire smaller shutdown zone, and because of the expected ease of detection for the former groups. 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 thresholds above which NMFS believes the best available science indicates marine mammals would be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that would 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 Thresholds

NMFS recommends the use of acoustic thresholds 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 PTS of some degree (equated to Level A harassment). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

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 pressure received levels (RMS SPL) of 120 dB (referenced to 1 micropascal (re 1 μPa)) for continuous (*e.g.,* vibratory pile driving, drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. For in-air sounds, NMFS predicts that harbor seals exposed above received levels of 90 dB re 20 μPa (rms) would be behaviorally harassed, and other pinnipeds would be harassed when exposed above 100 dB re 20 μPa (rms). 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.

Cordova's proposed activity includes the use of continuous (vibratory hammer and DTH drilling) and impulsive (DTH drilling and impact pile driving) sources, and therefore the 120 and 160 dB re 1 μPa (rms) thresholds are applicable.

Level A harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). Cordova's proposed activity includes the use of impulsive (impact pile-driving and DTH drilling) and non-impulsive (vibratory hammer and DTH drilling) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 5—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds* (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	*Cell 2:* $L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	*Cell 4:* $L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	*Cell 6:* $L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	*Cell 8:* $L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	*Cell 10:* $L_{E,OW,24h}$: 219 dB.

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

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa²s. In this table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

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 proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* impact pile driving, vibratory pile driving and removal, and DTH).

In order to calculate distances to the Level A harassment and Level B harassment thresholds for the methods and piles being used in this project, NMFS used acoustic monitoring data from other locations to develop source levels for the various pile types, sizes and methods (Table 6). This analysis uses the practical spreading loss model, a standard assumption regarding sound propagation for similar environments, to estimate transmission of sound through water. For this analysis, the transmission loss factor of 15 (4.5 dB per doubling of distance) is used. A weighting adjustment factor of 2.5 or 2, a standard default value for vibratory pile driving and removal or impact driving and DTH respectively, were used to calculate Level A harassment areas.

NMFS recommends treating DTH systems as both impulsive and continuous, non-impulsive sound source types simultaneously. Thus, impulsive thresholds are used to evaluate Level A harassment, and continuous thresholds are used to evaluate Level B harassment. With regards to DTH mono-hammers, NMFS recommends proxy levels for Level A harassment based on available data regarding DTH systems of similar sized piles and holes (Denes *et al.,* 2019; Guan and Miner, 2020; Reyff and Heyvaert, 2019; Reyff, 2020; Heyvaert and Reyff, 2021) (Table 1 and 2 includes number of piles and duration for each phase; Table 6 includes peak pressure, sound pressure, and sound exposure levels for each pile type).

TABLE 6—ESTIMATED UNDERWATER PROXY SOURCE LEVELS FOR PILE INSTALLATION AND REMOVAL

Pile type	Phase	Proxy source levels (dB) at 10 m			Reference
		Peak	RMS	SEL	
Vibratory Pile Driving					
12–24 in timber pile removal	I, II	....	162	....	Greenbusch *et al.* (2018), CALTRANS (2020).
12–24 in steel pile removal	I	....	161	....	NAVFAC (2013; 2015).
24 in steel template pile install/removal	I, II				
16 in steel pile	I				
18 in steel pile	I				
24 in steel pile	II				
30 in steel pile	I	....	161.9	....	Denes *et al.* (2016).
Steel H-pile	II	....	165	....	CALTRANS (2015).
Steel sheet pile	II	....	162	....	Buehler *et al.* (2015).
Impact Pile Driving					
16 in steel pile	I	192.8	181.1	168.3	Denes *et al.* (2016).
18 in steel pile	I				
24 in steel pile	II				
30 in steel pile	I	210	190	177	NMFS 2023 analysis *.
Steel H-pile	II	200	177	170	CALTRANS (2015).
Steel sheet pile	II	205	190	180	CALTRANS (2015).
DTH Drilling					
16 in steel pile	I	....	167	159	Heyvaert and Reyff (2021).
18–24 in steel pile	I,II				
30 in steel pile	I	....	174	164	Denes *et al.* (2019), Reyff and Heyvaert (2019), Reyff (2020).
Steel H-pile	II				

Note: SEL= sound exposure level; RMS = root mean square.

*NMFS used the mean of regionally relevant measurements to determine suitable proxy source values for these pile types. Projects included in the analysis were Navy (2012, 2013) and Miner (2020), following the methodology of Navy (2015).

TABLE 7—ESTIMATED IN-AIR PROXY SOURCE LEVELS FOR PILE INSTALLATION AND REMOVAL

Pile type	Phase	Proxy source levels (dB) at 15 m			Reference
		Peak	RMS	SEL	
Vibratory Pile Driving					
24 in steel template pile install/removal 18 in steel pile Steel H-pile	I	....	103.2	....	Laughlin 2010.
Impact Pile Driving					
18 in steel pile Steel H-pile	I	....	101	....	Ghebreghzabiher *et al.* (2017).

TABLE 7—ESTIMATED IN-AIR PROXY SOURCE LEVELS FOR PILE INSTALLATION AND REMOVAL—Continued

Pile type	Phase	Proxy source levels (dB) at 15 m			Reference
		Peak	RMS	SEL	
DTH Drilling [1]					
18 in steel pile Steel H-pile	I	....	101	....	Ghebregzabiher *et al.* (2017).

Note: SEL = sound exposure level; RMS = root mean square.
[1] We conservatively assume that the proxy value for DTH driving is the same as for impact driving.

Level B Harassment Zones

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 bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \log_{10} (R_1/R_2),$$

Where:

TL = transmission loss in dB
B = transmission loss coefficient; for practical spreading equals 15
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.

The recommended TL coefficient for most nearshore environments is the practical spreading value of 15. This value results in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions, which is the most appropriate assumption for Cordova's proposed underwater activities. The Level B harassment zones and approximate amount of area ensonified for the proposed underwater activities are shown in Table 8. The Level B harassment zones for the proposed upland pile driving activities that may generate airborne noise are shown in Table 7.

Level A Harassment Zones

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. 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, such as pile installation or removal, 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 PTS. The isopleths generated by the User Spreadsheet used the same TL coefficient as the Level B harassment zone calculations (*i.e.,* the practical spreading value of 15). Inputs used in the User Spreadsheet (*e.g.,* number of piles per day, duration and/or strikes per pile) are presented in Tables 1 and 2. The maximum RMS SPL, SEL, and resulting isopleths are reported in Tables 6, 7, and 8.

TABLE 8—LEVEL A AND LEVEL B HARASSMENT ISOPLETHS FOR PILE DRIVING ACTIVITIES

Pile type	Phase	Distances to Level A and Level B thresholds (m)					Ensonified area [1 2] for Level B (km^2)
		Level A				Level B	
		MF	HF	Phocid	Otariid		
Vibratory Pile Driving							
12–24 in timber pile removal	I, II	1.8	30.5	12.5	0.9	6,309.6	125.
12–24 in steel pile removal	I	1.6	26.1	10.7	0.8	5,411.7	92.
24 in steel template pile install/removal.	I, II	0.9	14.2	5.8	0.4		
16 in steel pile	I	1.1	18.6	7.6	0.5		
18 in steel pile	I	1.4	22.5	9.3	0.7		
24 in steel pile	II						
30 in steel pile	I	1.4	24.1	9.9	0.7	6,213.5	121.2.
steel H-pile	II	1.1	18.7	7.7	0.5	10,000	314.
steel sheet pile	II	0.7	11.8	4.8	0.3	6,310	125.
In-air pile installation/removal	I	....	....	....	....	68.6 (Phocid)/22.8 (Otariid)	0.01 (Phocid)/0.002 (Otariid).
Impact Pile Driving							
16 in steel pile	I	4.7	158.8	71.4	5.2	255	0.2.
18 in steel pile	I						
24 in steel pile	II						
30 in steel pile	I	23.6	791.3	355.5	25.9	1,000	3.14.
steel H-pile	II	12.1	405.3	182.1	13.3	341.5	0.37.
steel sheet pile	II	56.2	1,881.2	845.2	61.5	1,000	3.14.
In-air pile installation/removal	I	....	....	....	....	53.2 (Phocid)/16.8 (Otariid)	0.009 (Phocid)/0.0009 (Otariid).

TABLE 8—LEVEL A AND LEVEL B HARASSMENT ISOPLETHS FOR PILE DRIVING ACTIVITIES—Continued

Pile type	Phase	Distances to Level A and Level B thresholds (m)					Ensonified area[1 2] for Level B (km^2)
		Level A				Level B	
		MF	HF	Phocid	Otariid		
DTH Drilling							
16 in steel pile	I	32.1	1,075.7	483.3	35.2	13,593.6	580.2.
18–24 in steel pile	I,II						
30 in steel pile	I	61.3	2,052.20	922	67.1	39,810.7	4976.6.
steel H-pile	II						
In-air pile installation/removal	I	....	....	....	....	53.2 (Phocid)/16.8 (Otariid)	0.009 (Phocid)/0.0009 (Otariid).

[1] Areas were calculated based on areas of a circle with the specified radius from Table 6 and 7 and realized ensonified areas will be smaller due to truncation by land masses.
[2] The ensonified area within Cordova harbor will be no more than 0.19 km^2.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including presence, density, local knowledge, or other relevant information which will inform the take calculations.

Daily occurrence probability of each marine mammal species in the action area is based on consultation with local researchers and marine professionals. Occurrence probability estimates are based on conservative density approximations for each species and factor in historic data of occurrence, seasonality, and group size in Orca Bay, Orca Inlet, and/or Prince William Sound. A summary of proposed take is shown in Table 9. To accurately describe species occurrence near the action area, marine mammals were described as either common (multiple sightings every month, could occur each day), frequent (multiple sightings every year, could occur each month), or infrequent (few sightings every year, could occur each month).

TABLE 9—ESTIMATED OCCURRENCE OF GROUP SIGHTINGS OF MARINE MAMMALS

Species	Frequency	Seasonality	Occurrence	Group size [a]
Steller sea lion:				
(within harbor)	Common	Year-round	1 group per day	[b] 4.1
(outside harbor)	Common	Year-round	2 groups per day	[b] 4.1
Harbor seal:				
(within harbor)	Frequent	Year-round	1 group per day	[c] 3.5
(outside harbor)	Common	Year-round	2 groups per day	[c] 3.5
Killer whale	Infrequent	Year-round	1 group every 10 days	[d] 14
Dall's porpoise	Infrequent	Year-round	1 group every 10 days	[e] 4.3

[a] Group size was averaged from seasonal data (Steller sea lions and harbor seals), pod size (killer whales), and observational data (Dall's porpoise) for more information see application.
[b] Leonard and Wisdom (2020); Sigler *et al.* (2017).
[c] ADF&G (2022a).
[d] Muto *et al.* (2022).
[e] Moran *et al.* (2018).

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.

For total underwater take estimate, the daily occurrence probability for a species was multiplied by the estimated group size and by the number of days of each type of pile driving activity. Group size is based on the best available published research for these species and their presence in this area.

Estimated take = Group size × Groups per day × Days of pile driving activity

Take of pinnipeds by Level B harassment due to airborne noise was calculated based on the proportion of area within the harbor likely to be ensonified above the thresholds for harbor seals and other pinnipeds, respectively. The percent of the harbor ensonified was then multiplied by the number of days of pile driving, the group size, and groups per day, as done for underwater take estimates. The total numbers of takes by Level B harassment due to airborne noise proposed for authorization for harbor seal and Steller sea lion are 7 and 0, respectively.

Take by Level A harassment is requested for Steller sea lions and harbor seals given that these species are known to spend extended periods of time within Cordova Harbor and most Level A isopleths are contained within Cordova Harbor. The take by Level A harassment calculations are based on lower daily occurrence estimates for each species than take by Level B harassment calculations based on input from marine professionals in the community about their presence in within the smaller ensonified zone of the harbor (Table 9; Greenwood 2022).

Take by Level A harassment is also requested for Dall's porpoise for impact driving of sheet piles and DTH drilling of 30 in and H-piles as it is not practicable to observe and shut down for porpoises throughout the entire Level A zone (1,885 m for impact driving and 2,050 m for DTH drilling). Additionally, Level A harassment isopleths for most hearing groups and pile types were less than 10 m (Table 8) which is the minimum shutdown zone for this project (see Proposed Mitigation). Because the Level A isopleths for those piles are within the minimum 10 m shutdown zone, no takes by Level A harassment are expected to occur from those activities, and therefore the predicted take by Level A harassment were removed from the total take calculations (Table 10).

During Phase II, killer whale and Dall's porpoise are not expected to occur within any harassment zones due to the relatively shallow water that would be ensonified (south of Spike Island into tidal mud flats) and therefore no take was requested for these species.

TABLE 10—PROPOSED TAKE OF MARINE MAMMALS BY LEVEL A AND LEVEL B HARASSMENT AND PERCENT OF STOCK PROPOSED TO BE TAKEN BY PHASE

Species	Stock/DPS	Proposed authorized take			Stock size [1]	% of stock
		Level A	Level B	Total take		
Phase I						
Steller sea lion	Western DPS	107	788	895	52,932	1.69
Harbor seal	Prince William Sound	154	681	835	44,756	1.87
Killer whale [2]	Alaska Resident		83	83	1,920	4.35
	Gulf of Alaska/Aleutian Islands/Bering Sea Transient.		26	26	587	4.35
Dall's porpoise	Alaska	10	32	42	13,110	0.32
Phase II						
Steller sea lion	Western DPS	98	730	828	52,932	1.56
Harbor seal	Prince William Sound	133	623	756	44,756	1.69

[1] Stock size comes from the most recent SARs except for Dall's porpoise whose stock estimate is based on surveys from western Prince William Sound only, as abundance estimates for the Alaska stock are more than eight years old and no longer considered reliable (Muto et al., 2022).
[2] AT1 transient stock take calculation resulted in 0.3 takes, therefore no takes were requested or are proposed for authorization.

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. 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 following mitigation measures are included in the proposed IHAs:

Mitigation Measures

Cordova must follow mitigation measures as specified below:

- Ensure that construction supervisors and crews, the monitoring team, and relevant Cordova staff are trained prior to the start of all pile driving and DTH drilling activity, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work;
  - Employ Protected Species Observers (PSOs) and establish monitoring locations as described in the application and the IHA. The Holder must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions. For all pile driving and removal at least one PSO must be used. The PSO will be stationed as close to the activity as possible;
- The placement of the PSOs during all pile driving and removal and DTH drilling activities will ensure that the entire shutdown zone is visible during pile installation;
- Monitoring must take place from 30 minutes prior to initiation of pile driving or DTH drilling activity (*i.e.,* pre-clearance monitoring) through 30 minutes post-completion of pile driving or DTH drilling activity;
  - Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in Table 11 are clear of marine mammals. Pile driving and DTH drilling may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals;
  - Cordova must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer; and
  - If a marine mammal is observed entering or within the shutdown zones indicated in Table 11, pile driving and DTH drilling must be delayed or halted. If pile driving is 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 shutdown zone (Table 11) or 15 minutes have passed without re-detection of the animal;
- As proposed by the applicant, in water activities will take place only

between civil dawn and civil dusk when PSOs can effectively monitor for the presence of marine mammals; during conditions with a Beaufort sea state of 4 or less. Pile driving and DTH drilling may continue for up to 30 minutes after sunset during evening civil twilight, as necessary to secure a pile for safety prior to demobilization during this time. The length of the post-activity monitoring period may be reduced if darkness precludes visibility of the shutdown and monitoring zones.

Shutdown Zones

Cordova will establish shutdown zones for all pile driving and DTH drilling activities. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones would be based upon the Level A harassment isopleth for each pile size/type and driving method where applicable, as shown in Table 11.

For in-water heavy machinery activities other than pile driving, if a marine mammal comes within 10 m, work will stop and vessels will reduce speed to the minimum level required to maintain steerage and safe working conditions. A 10 m shutdown zone serves to protect marine mammals from physical interactions with project vessels during pile driving and other construction activities, such as barge positioning or drilling. If an activity is 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 shutdown zone indicated in Table 11 or 15 minutes have passed without re-detection of the animal. Construction activities must be halted upon observation of a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met entering or within the harassment zone.

All marine mammals will be monitored in the Level B harassment zones and throughout the area as far as visual monitoring can take place. If a marine mammal enters the Level B harassment zone, construction activities including in-water work will continue and the animal's presence within the estimated harassment zone will be documented.

Cordova would also establish shutdown zones for all marine mammals for which take has not been authorized or for which incidental take has been authorized but the authorized number of takes has been met. These zones are equivalent to the Level B harassment zones for each activity. If a marine mammal species not covered under this IHA enters the shutdown zone, all in-water activities will cease until the animal leaves the zone or has not been observed for at least 15 minutes, and NMFS will be notified about species and precautions taken. Pile driving will proceed if the non-IHA species is observed to leave the Level B harassment zone or if 15 minutes have passed since the last observation.

If shutdown and/or clearance procedures would result in an imminent safety concern, as determined by Cordova or its designated officials, the in-water activity will be allowed to continue until the safety concern has been addressed, and the animal will be continuously monitored.

TABLE 11—PROPOSED SHUTDOWN AND MONITORING ZONES

Pile type	Phase	Minimum shutdown zone (m)				Monitoring zone (m)
		MF	HF	Phocid	Otariid	
Barge movements, pile positioning, *etc.*	I, II	10	10	10	10	10.
Vibratory Pile Driving						
12–24 in timber pile removal	I, II	10	35	25	10	6,310.
12–24 in steel pile removal	I	10	35	20	10	5,425.
24 in steel template pile install/removal 16–24 in steel pile.	I, II	10	25	10	10	5,425.
30 in steel pile	I	10	25	10	10	6,225.
Steel H-pile	II	10	35	25	10	10,000.
Steel sheet pile	II	10	25	10	10	6,310.
In air pile install/removal	I					70 (phocids)/25 (otariids).
Impact Pile Driving						
16–24 in steel pile	I	10	185	75	10	255.
30 in steel pile	I	25	800	360	25	1,000.
Steel H-pile	II	25	410	185	25	350.
Steel sheet pile	II	75	1,000	500	75	1,000.
In air pile install	I					55 (phocids)/20 (otariids).
DTH Drilling						
16–24 in pile	I, II	35	1,000	500	40	13,594.
30 in pile	I	75	1,000	500	75	39,811.
Steel H-pile	II	75	1,000	500	75	39,811.
In air pile install	I					55 (phocids)/20 (otariids).

Protected Species Observers

The placement of PSOs during all construction activities (described in the Proposed Monitoring and Reporting section) would ensure that the entire shutdown zone is visible. Should environmental conditions deteriorate such that the entire shutdown zone would not be visible (*e.g.,* fog, heavy rain), pile driving would be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

PSOs would monitor the full shutdown zones and the remaining

Level A harassment and the Level B harassment zones to the extent practicable. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project areas outside the shutdown zones and thus prepare for a potential cessation of activity should the animal enter the shutdown zone.

Pre-Activity Monitoring

Prior to the start of daily in-water construction activity, or whenever a break in pile driving or DTH drilling of 30 minutes or longer occurs, PSOs would observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone would be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zones listed in Table 11, pile driving activity would be delayed or halted. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones would commence. A determination that the shutdown zone is clear must be made during a period of good visibility (*i.e.,* the entire shutdown zone and surrounding waters must be visible to the naked eye).

Soft-Start Procedures

Soft-start procedures provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors would be required to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. Soft-start would be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

Based on our evaluation of the applicant's proposed measures NMFS 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, and areas of similar significance.

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.

Visual Monitoring

Marine mammal monitoring must be conducted in accordance with the conditions in this section and the IHA. Marine mammal monitoring during pile driving activities would be conducted by PSOs meeting NMFS' following requirements:

- Independent PSOs (*i.e.,* not construction personnel) who have no other assigned tasks during monitoring periods would be used;
  - ○ At least one PSO would have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
  - ○ Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
  - ○ Where a team of three or more PSOs is required, a lead observer or monitoring coordinator would be designated. The lead observer would be required to have prior experience working as a marine mammal observer during construction.

PSOs must have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.
- Cordova must employ up to five PSOs depending on the size of the monitoring and shutdown zones. A minimum of two PSOs (including the lead PSO) must be assigned to the active pile driving location to monitor the shutdown zones and as much of the Level B harassment zones as possible.
- Cordova must establish monitoring locations with the best views of monitoring zones as described in the IHA and Application.
- Up to five monitors will be used at a time depending on the size of the monitoring area. PSOs would be deployed in strategic locations around the area of potential effects at all times during in-water pile driving and removal. PSOs will be positioned at locations that provide full views of the impact hammering monitoring zone and the Level A harassment Shutdown Zones. All PSOs would have access to

high-quality binoculars, range finders to monitor distances, and a compass to record bearing to animals as well as radios or cells phones for maintaining contact with work crews.

◦ During work in the South Harbor, up to three PSOs will be stationed at the following locations: along the South Harbor parking area, on the Breakwater Trail, and at a viewpoint along New England Cannery Road.

◦ During work in the North Harbor, up to five PSOs will be stationed at the following locations: along the North Harbor parking area, on the Breakwater Trail, at the viewpoint along the shore near Saddle Point, at a viewpoint along Whitshed Road, and on a vessel in Orca Inlet.

Monitoring would be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, PSOs would record all incidents of marine mammal occurrence, regardless of distance from activity, and would document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

Cordova shall conduct briefings between construction supervisors and crews, PSOs, Cordova staff prior to the start of all pile driving activities and when new personnel join the work. These briefings would explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Reporting

A draft marine mammal monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal activities for each IHA, or 60 days prior to a requested date of issuance from any future IHAs for projects at the same location, whichever comes first. The report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (*i.e.,* impact, vibratory, or DTH drilling) and the total equipment duration for vibratory removal for each pile or total number of strikes for each pile (impact driving);
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information:

◦ Name of PSO who sighted the animal(s) and PSO location and activity at the time of sighting;

◦ Time of sighting;

◦ Identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentifiable), PSO confidence in identification, and the composition of the group if there is a mix of species;

◦ Distance and bearing of each marine mammal observed relative to the pile being driven for each sightings (if pile driving was occurring at time of sighting);

◦ Estimated number of animals (min/max/best estimate);

◦ Estimated number of animals by cohort (adults, juveniles, neonates, group composition, sex class, *etc.*);

◦ Animal's closest point of approach and estimated time spent within the harassment zone;

◦ Description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.,* no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);

◦ Number of marine mammals detected within the harassment zones and shutdown zones; by species; and

◦ Detailed information about any implementation of any mitigation triggered (*e.g.,* shutdowns and delays), a description of specific actions that ensured, and resulting changes in behavior of the animal(s), if any.

If no comments are received from NMFS within 30 days, the draft reports will constitute the final reports. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder must immediately cease the specified activities and report the incident to the Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.gov*), NMFS and to the Alaska Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, Cordova must 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. The IHA-holder must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

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 the species listed in Table 3, 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. Also, because both the number and nature of the estimated takes anticipated to occur are identical in Phase I and Phase II, the analysis below applies to each of the IHAs.

Pile driving and DTH drilling activities associated with the project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment and, for some species, Level A harassment from underwater sounds generated by pile driving. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

No serious injury or mortality would be expected, even in the absence of required mitigation measures, given the nature of the activities. Further, no take by Level A harassment is anticipated for killer whales due to the application of planned mitigation measures, such as shutdown zones that encompass the Level A harassment zones for the species, the rarity of the species near the action area, and the shallow depths of the harbor. The potential for harassment would be minimized through the construction method and the implementation of the planned mitigation measures (see Proposed Mitigation section).

Take by Level A harassment is proposed for three species (Steller sea lion, harbor seal, and Dall's porpoise) as the Level A harassment isopleths exceed the size of the shutdown zones for specific construction scenarios. Additionally, the two pinniped species are common in and around the action area. Therefore, there is the possibility that an animal could enter a Level A harassment zone and remain within that zone for a duration long enough to incur PTS. Level A harassment of these species is therefore proposed for authorization. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS (*i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by impact pile driving such as the low-frequency region below 2 kHz), not severe hearing impairment or impairment within the ranges of greatest hearing sensitivity. 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 PTS.

Further, the amount of take proposed for authorization by Level A harassment is very low for the marine mammal stocks and species. If hearing impairment occurs, it is most likely that the affected animal would lose only a few decibels in its hearing sensitivity. Due to the small degree anticipated, any PTS potential incurred would not be expected to affect the reproductive success or survival of any individuals, much less result in adverse impacts on the species or stock.

The Level A harassment zones identified in Tables 7 and 8 are based upon an animal exposed to pile driving or DTH drilling of several piles per day (up to 25 piles per day for vibratory removal, 10 piles per day of vibratory installation, 6 piles per day of impact driving, and 4 piles per day of DTH drilling). Given the short duration to impact drive or vibratory install or extract, or use DTH drilling, each pile and break between pile installations (to reset equipment and move piles into place), an animal would have to remain within the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement patterns in the area. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.,* PTS onset) at lower frequencies where pile driving energy is concentrated, and unlikely to result in impacts to individual fitness, reproduction, or survival.

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. However, since the hearing sensitivity of individuals that incur TTS is expected to recover completely within minutes to hours, it is unlikely that the brief hearing impairment would affect the individual's long-term ability to forage and communicate with conspecifics, and would therefore not likely impact reproduction or survival of any individual marine mammal, let alone adversely affect rates of recruitment or survival of the species or stock.

The nature of the pile driving project precludes the likelihood of serious injury or mortality. For all species and stocks, take would occur within a limited, confined area (adjacent to the project site) of the stock's range. Take by Level A and Level B harassment would be reduced to the level of least practicable adverse impact through use of mitigation measures described herein. Further, the amount of take proposed to be authorized is extremely small when compared to stock abundance.

Behavioral responses of marine mammals to pile driving, pile removals, and DTH drilling in Cordova Harbor and the surrounding Orca Inlet are expected to be mild, short term, and temporary. Marine mammals within the Level B harassment zones may not show any visual cues they are disturbed by activities or they could 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 driving, pile removal, and DTH drilling are temporary activities and effects would cease when equipment is not operating, any harassment occurring would be temporary. Additionally, many of the species present in region would only be present temporarily based on seasonal patterns or during transit between other habitats. These species would be exposed to even smaller periods of noise-generating activity, further decreasing the impacts.

Nearly all inland waters of southeast Alaska, including Orca Inlet, are included in the southeast Alaska humpback whale feeding Biologically Important Area (BIA) (Ferguson *et al.,* 2015), though humpback whale distribution in southeast Alaska varies by season and waterway (Dahlheim *et al.,* 2009). Humpback whales are present within Orca Inlet intermittently and in low numbers, however due to the shallow waters around Cordova Harbor, the BIA is not expected to be affected. Therefore, the proposed project is not expected to have significant adverse effects on the foraging of Alaska humpback whale. The same regions are also a part of the Western DPS Steller sea lion ESA critical habitat. While Steller sea lions are common in the project area, there are no essential physical and biological habitat features, such as haulouts or rookeries, within the proposed project area. The nearest haulout and rookery are over 30 km away from the proposed project area. Therefore, the proposed project is not expected to have significant adverse effects on the critical habitat of Wester DPS Steller sea lions. No areas of specific biological importance (*e.g.,* ESA critical habitat, other BIAs, or other areas) for any other species are known to co-occur with the project area.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on each stock's ability to recover. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities would have only minor, 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.

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;
- Level A harassment would be very small amounts and of low degree;
- Level A harassment takes of only Steller sea lions and harbor seals;
- For all species, the Orca Inlet and the Cordova Harbor is a very small and peripheral part of their range;
- Anticipated takes by Level B harassment are relatively low for all stocks. Level B harassment would be primarily in the form of behavioral disturbance, resulting in avoidance of the project areas around where impact or vibratory pile driving is occurring, with some low-level TTS that may limit the detection of acoustic cues for relatively brief amounts of time in relatively confined footprints of the activities;
- Effects on species that serve as prey for marine mammals from the activities are 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 to adverse impacts on their populations;
- The ensonified areas are very small relative to the overall habitat ranges of all species and stocks, and would not adversely affect ESA-designated critical habitat for any species or any areas of known biological importance;
- The lack of anticipated significant or long-term negative effects to marine mammal habitat; and
- Cordova would implement mitigation measures including soft-starts and shutdown zones to minimize the numbers of marine mammals exposed to injurious levels of sound, and to ensure that take by Level A harassment is, at most, a small degree of PTS.

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, specific to each of the two consecutive years of proposed activity, would 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 sections 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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize, specific to each of the two consecutive years of proposed activity, is below one third of the estimated stock abundance for all species (in fact, take of individuals is less than five percent of the abundance of the affected stocks, see Table 10). This is likely a conservative estimate because we assume all takes are of different individual animals, which is likely not the case. Some individuals may return multiple times in a day, but PSOs would count them as separate takes if they cannot be individually identified.

The most recent estimate for the Alaska stock of Dall's porpoise was 13,110 animals however this number just accounts for a portion of the stock's range. Therefore, the 42 takes of this stock proposed for authorization is believed to be an even smaller portion of the overall stock abundance.

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.

The Alutiiq and Eyak people of Prince William Sound traditionally harvested marine mammals, however the last recorded subsistence harvest in Cordova was in 2014 as part of a regional effort to update the status of subsistence uses in Exxon Valdez Oil Spill communities, during which no marine mammals were harvested in Cordova (Fall and Zimpelman 2016).

In the decades since the Exxon Valdez Oil Spill, there have been declines in the number of households hunting and harvesting larger marine mammals in Prince William Sound. Surveys gathering subsistence data found that 10 percent or fewer households harvest or use harbor seals or sea lions (Poe *et al.,* 2010). Subsistence hunters in Prince William Sound report having to travel farther from their home communities to be successful when harvesting marine mammals (Keating *et al.,* 2020).

The proposed project is not likely to adversely impact the availability of any marine mammal species or stocks that are commonly used for subsistence purposes or to impact subsistence harvest of marine mammals in the region because:

- There is no recent recorded subsistence harvest of marine mammals in the area;
- Construction activities are localized and temporary;
- Mitigation measures will be implemented to minimize disturbance of marine mammals in the action area; and,
- The project will not result in significant changes to availability of subsistence resources.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the proposed mitigation and monitoring measures, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from Cordova's proposed activities.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure 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 IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with the Alaska Regional Office.

NMFS is proposing to authorize take of the Western DPS of Steller Sea Lions, which are listed under the ESA. The Permits and Conservation Division has requested initiation of Section 7 consultation with the Alaska Region 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 Authorizations

As a result of these preliminary determinations, NMFS proposes to issue two sequential IHAs, each lasting one year, to the City of Cordova for conducting the Cordova Harbor Rebuild Project in Cordova, Alaska, starting in August 2023 for Phase I and August 2024 for Part II, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHAs 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 authorizations, and any other aspect of this notice of proposed IHAs for the proposed construction project. We also request comment on the potential renewals of these proposed IHAs 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 these IHAs or subsequent renewal IHAs.

On a case-by-case basis, NMFS may issue a one-time, one-year renewal for each of the two IHAs 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 one 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: July 5, 2023.

Kimberly Damon-Randall,

Director, Office of Protected Resources, National Marine Fisheries Service.

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BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD119]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Marine Geophysical Survey of the Blake Plateau in the Northwest Atlantic Ocean

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Lamont-Doherty Earth Observatory (L–DEO) to incidentally harass marine mammals during a marine geophysical survey of the Blake Plateau in the northwest Atlantic Ocean.

DATES: This authorization is effective from July 10, 2023 through July 9, 2024.

ADDRESSES: 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/action/incidental-take-authorization-lamont-doherty-earth-observatorys-marine-geophysical-surveys.* In case of problems accessing these documents, please call the contact listed below.

FOR FURTHER INFORMATION CONTACT: Jenna Harlacher, Office of Protected Resources (OPR) NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct 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.