



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XF538]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the City of Kodiak St. Herman Harbor Infrastructure Rebuild Project Kodiak, Alaska

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

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

SUMMARY: NMFS has received a request from the City of Kodiak for authorization to take marine mammals incidental to 2 years of construction activities associated with the St. Herman Harbor Infrastructure Rebuild Project (SHHIRP) in Kodiak, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two consecutive 1-year incidental harassment authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on possible one-time, 1-year renewals 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 **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Comments should be addressed to Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be

submitted via email to ITP.demarest@noaa.gov. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>. In case of problems accessing these documents, please call the contact listed below.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period.

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

FOR FURTHER INFORMATION CONTACT: Austin Demarest, 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 (collectively referred to as “mitigation”); and requirements pertaining to the monitoring and reporting of the takings. The definitions of all applicable MMPA statutory terms used above are included in the relevant sections below and can be found in section 3 of the MMPA (16 U.S.C. 1362) and NMFS regulations at 50 CFR 216.103.

National Environmental Policy Act

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

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

Summary of Request

On February 26, 2025, NMFS received a request from the City of Kodiak for two consecutive IHAs to take marine mammals incidental to pile driving (installation and removal), down-the hole (DTH) drilling and hydraulic rock hammering associated with

the SHHIRP in Kodiak, Alaska. The City of Kodiak has divided the project into two phases and is requesting an IHA for each phase. Following NMFS' review of the application, the City of Kodiak submitted a revised version on January 23, 2026. The application was deemed adequate and complete on February 2, 2026. The City of Kodiak's request is for take of 12 species (15 stocks) of marine mammals, by Level B harassment and, for a subset of 4 species (4 stocks), Level A harassment. Take for these numbers of species and stocks of marine mammals are the same for both proposed IHAs. Neither the City of Kodiak nor NMFS expect serious injury or mortality to result from these activities' and, therefore, IHAs are appropriate.

Description of Proposed Activity

Overview

St. Herman Harbor in Kodiak, Alaska, provides essential mooring for both recreational and commercial fishing vessels but much of the harbor's infrastructure is over 40 years old, deteriorating, and difficult to navigate. This has led to a loss of mooring capacity and poses challenges for vessels. To address these issues, the City of Kodiak is proposing the SHHIRP. This project will remove and replace the aging infrastructure and dredge the harbor to restore functionality and improve vessel navigation. The SHHIRP will be completed in two phases over 2 years, from 2026 to 2028. Phase I is currently scheduled to begin November 1, 2026, and continue through October 31, 2027. Phase I construction involves installing a new vessel mooring float and drive-down dock. These additions will provide extra mooring capacity and serve as temporary moorage for vessels displaced during Phase II. Phase II construction would begin after Phase I is complete and is anticipated to take no more than one year to complete. Phase II construction will involve removing and replacing the main harbor infrastructure and will include the removal of 12 existing concrete headwalks, mainwalks, slip floats, and piles. These will be replaced with 14 new floats and

associated piles in a more efficient configuration. Phase II will also include dredging approximately 1,900 cubic yards (yd³) (1,453 cubic meters (m³)) of sediment and bedrock from the harbor to improve vessel safety. To facilitate removal, hydraulic rock hammering will be used to fracture bedrock at an existing shoal.

Activities that have the potential to cause incidental take by Level A harassment and Level B harassment of marine mammals include vibratory pile driving and removal, impact pile driving, DTH drilling, and hydraulic rock hammering to break up bedrock.

Dates and Duration

The City of Kodiak anticipates the project would occur in two phases over 2 years. The proposed IHAs would be valid for the statutory maximum of 1 year from the date of effectiveness, and will become effective upon written notification from the applicant to NMFS, but not beginning later than 1 year from the date of issuance or extending beyond 2 years from the date of issuance. The specified activities could occur any time each year, during daylight hours from 30 minutes before civil dawn to 30 minutes after civil dusk. Phase I will occur over 42 non-consecutive construction days, and Phase II will occur over 227 non-consecutive days.

Specified Geographic Region

The City of Kodiak would construct the SHHIRP within St. Herman Harbor, situated on the western shore of Near Island, Kodiak, Alaska. As one of Kodiak's 2 primary boat harbors, the facility provides moorage for more than 328 vessels, ranging from small recreation boats to large commercial fishing vessels. The benthic substrate within the harbor consists of sediment and bedrock, including a prominent bedrock shoal that runs parallel to southern shore of Uski Island along the Federal Navigation Channel.

Regionally, St Herman Harbor is located on Near Island off the southeastern coast of Kodiak Island within the Kodiak Archipelago. Situated in the northwestern Gulf of Alaska, the archipelago is separated from the Alaska mainland by the Shelikof Strait.

This subarctic marine environment is characterized by high primary productivity, complex insular geography, and post glacial isolation. The harbor serves as a primary regional hub for the Kodiak commercial fishing fleet, which targets Pacific salmon (*Oncorhynchus* spp.), Pacific halibut (*Hippoglossus stenolepis*), various groundfish species (including walleye pollock and Pacific cod), king crab (*Paralithodes camtschaticus*), and Pacific herring (*Clupea pallasii*).



Figure 1 -- St. Herman Harbor Infrastructure Rebuild Project Geographic Location



Figure 2 -- St. Herman Harbor Infrastructure Replacement Project Site Map

Detailed Description of the Specified Activity

For Phase I of the SHHIRP, in-water work will include the installation of the slip float and drive down dock. First, 20 24-inch steel pipe temporary piles would be installed with a vibratory hammer, but 12 of these temporary piles could be installed by impact driving or DTH drilling. All temporary piles would be removed with a vibratory hammer after permanent pile installation. With the temporary piles as guides, 6 24-inch steel pipe piles and 52 30-inch permanent steel pipe piles would be installed with a vibratory hammer and then driven to tip elevation with an impact hammer. After piles reach tip elevation, a DTH drill would be inserted into each permanent pile, drilled into the bedrock, and then the shaft would be filled with concrete (table 1). Phase I would occur over 42 non-consecutive days from November 1, 2026, through October 31, 2027.

For Phase II of the SHHIRP, 12 existing slip floats, consisting of 656 steel pipe piles between 12 and 20 inches in diameter, would be removed. These piles would primarily be extracted by direct pull methods but may be extracted with vibratory

methods when direct pull methods are not practicable. For purposes of the IHA, the City of Kodiak and NMFS assume all piles would be removed via vibratory hammer.

New structures for Phase II include 14 new slip floats and the associated support piles. Initially, 80 24-inch steel pipe temporary piles would be installed with a vibratory hammer which would be used to guide permanent piles into place. The permanent support piles consist of 41 16-inch steel pipe piles, 78 18-inch steel pipe piles, 22 20-inch steel pipe piles, and 120 24-inch steel pipe piles. All permanent and the 48 24-inch steel pipe temporary piles would be installed with vibratory hammering, impact hammering, and DTH drilling methods similar to Phase I (table 2). Multiple pile driving methods during Phase I or Phase II of the SHHIRP could occur on the same day but would not occur simultaneously.

Phase II of the SHHIRP would also include dredging of approximately 1,900 yd³ (1,453 m³) of sediment and bedrock. Bedrock will be removed by breaking up rock with a hydraulic hammer (*i.e.*, hoe ram or breaker). Dredging is not expected to cause take of marine mammals because dredging activities would not last for sufficient duration to present the reasonable potential for disruption of behavioral patterns, do not produce sound with characteristics likely to result in marine mammal harassment, or some combination of the above, and are thus not addressed further. However, incidental take could occur from the hydraulic hammering methods proposed to be used for breaking up bedrock because the underwater sound generated could reach levels and durations that may result in behavioral harassment and auditory injury. All dredged material would be loaded on a barge and disposed of in a quarry on Near Island. Phase II would occur over 227 non-consecutive days after Phase I is complete. Due to current funding restraints, the exact timing of Phase II is currently unknown.

Table 1 -- SHHIRP Phase I Pile Installation and Removal Summary

Method	Pile Size, Type	Piles / Day	Time(minutes) or (strikes/pile)	Strike Rate / Second	# of Piles	# of Days
<i>Temporary Pile Installation</i>						
Vibratory	24-inch, Round Steel	6	20	-	20	4
Impact	24-inch, Round Steel ^a	6	(300)	-	12	2
DTH	24-inch, Round Steel ^a	6	120	10 ^b	12	2
<i>Permanent Pile Installation</i>						
Vibratory	24-inch, Round Steel	6	20	-	6	1
Impact	24-inch, Round Steel	6	(1,800)	-	6	1
DTH	24-inch, Round Steel	6	120	10 ^b	6	1
Vibratory	30-inch, Round Steel	6	20	-	52	9
Impact	30-inch, Round Steel	6	(1,800)	-	52	9
DTH	30-inch, Round Steel	6	150	10 ^b	52	9
<i>Temporary Pile Removal</i>						
Vibratory	24-inch, Round Steel	6	20	-	20	4

^a Indicates 12 of the 20, 24-inch steel temporary piles could be installed with impact driving and/or DTH drilling methods but would be removed with vibratory methods. ^b The City of Kodiak estimates a repetition rate of 10 Hertz (Hz) which falls within the range measured during other projects in Southeast Alaska (Heyvaert and Reyff, 2021; Denes *et. al.*, 2016) While actual repetition rate may be higher, for purposes of this analysis, 10 Hz is a reasonable value to apply.

Table 2 -- SHHIRP Phase II Pile Installation, Removal, and Rock Hammering Summary

Method	Pile Size, Type	Piles / Day	Time (minutes) or (strikes / pile)	Strike Rate/Second	# of Piles	# of Days
<i>Pile Removal</i>						
Vibratory	12-20-inch, Round Steel	20	10	-	656	33
<i>Temporary Pile Installation</i>						
Vibratory	24-inch, Round Steel	6	20	-	80	13
Impact	24-inch, Round Steel	6	(300)	-	48	8
DTH	24-inch, Round Steel	6	120	10 ^a	48	8
<i>Permanent Pile Installation</i>						
Vibratory	16-inch, Round Steel	6	20	-	41	7
Impact	16-inch, Round Steel	6	(1,800)	-	41	7
DTH	16-inch, Round Steel	6	150	10 ^a	41	7
Vibratory	18-inch, Round Steel	6	20	-	78	13
Impact	18-inch, Round Steel	6	(1,800)	-	78	13
DTH	18-inch, Round Steel	6	150	10 ^a	78	13
Vibratory	20-inch, Round Steel	6	20	-	22	4
Impact	20-inch, Round Steel	6	(1,800)	-	22	4

DTH	20-inch, Round Steel	6	150	10 ^a	22	4
Vibratory	24-inch, Round Steel	6	20	-	120	20
Impact	24-inch, Round Steel	6	(1,800)	-	120	20
DTH	24-inch, Round Steel	6	150	10 ^a	120	20
<i>Temporary Pile Removal</i>						
Vibratory	24-inch / Round Steel	6	20	-	80	13
<i>Rock hammering/Dredging</i>						
Hydraulic Hammering	-	-	250 hours	-	-	20

^a The City of Kodiak estimates a repetition rate of 10 Hz which falls within the range measured during other projects in Southeast Alaska (Heyvaert and Reyff, 2021; Denes *et. al.*, 2016) While actual repetition rate may be higher, for purposes of this analysis, 10 Hz is a reasonable value to apply.

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; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (<https://www.fisheries.noaa.gov/find-species>).

Table 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 (M/SI) from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS’ stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS’ U.S. Alaska and Pacific SARs. All values presented in table 3 are the most recent available at the time of publication (including from the draft 2024 SARs) and are available online at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>.

Table 3 -- Species¹ with Estimated Take from the Specified Activities

Common name	Scientific name	Stock	ESA/MMP A status; Strategic (Y/N) ²	Stock abundance (CV, Nmin, most recent abundance survey) ³	PBR	Annual M/SI ⁴
Order Artiodactyla – Cetacea – Mysticeti (baleen whales)						
<i>Family Eschrichtiidae</i>						
Gray Whale	<i>Eschrichtius robustus</i>	Eastern N Pacific	-, -, N	26,960 (0.05, 25,849, 2016)	801	131
<i>Family Balaenopteridae (rorquals)</i>						
Fin Whale	<i>Balaenoptera physalus</i>	Northeast Pacific	E, D, Y	UND (UND, UND, 2013) ⁵	UND	0.6
Humpback Whale	<i>Megaptera novaeangliae</i>	Hawai'i	-, -, N	11,278 (0.56, 7,265, 2020) ⁶	127	27.09
Humpback Whale	<i>Megaptera novaeangliae</i>	Mexico-North Pacific	T, D, Y	N/A (N/A, N/A, 2006) ⁷	UND	0.57

Humpback Whale	<i>Megaptera novaeangliae</i>	Western N Pacific	E, D, Y	1,084 (0.088, 1,007, 2006)	3.4 ⁸	5.82
Minke Whale	<i>Balaenoptera acutorostrata</i>	AK		N/A (N/A, N/A, N/A) ⁹	UND	0
<i>Family Delphinidae</i>						
Killer Whale	<i>Orcinus orca</i>	Eastern North Pacific Alaska Resident	-, -, N	1,920 (N/A, 1,920, 2019) ¹⁰	19	1.3
Killer Whale	<i>Orcinus orca</i>	Eastern North Pacific Gulf of Alaska, Aleutian Islands and Bering Sea Transient	-, -, N	587 (N/A, 587, 2012) ¹⁰	5.9	0.8
Pacific White-Sided Dolphin	<i>Lagenorhynchus obliquidens</i>	N Pacific	-, -, N	26,880 (N/A, N/A, 1990)	UND	0
<i>Family Phocoenidae (porpoises)</i>						
Dall's Porpoise	<i>Phocoenoides dalli</i>	AK	-, -, N	UND (UND, UND, 2015) ⁵	UND	37
Harbor Porpoise	<i>Phocoena Phocoena</i>	Gulf of Alaska	-, -, Y	31,046 (0.21, N/A, 1998)	UND	72
Order Carnivora – Pinnipedia						
<i>Family Otariidae (eared seals and sea lions)</i>						
Northern Fur Seal	<i>Callorhinus ursinus</i>	Eastern Pacific	-, D, Y	626,618 (0.2, 530,376, 2019) ¹¹	11,403	373
Steller Sea Lion	<i>Eumetopias jubatus</i>	Western	E, D, Y	49,837 (N/A, 49,837, 2022) ¹²	299	267
<i>Family Phocidae (earless seals)</i>						
Harbor Seal	<i>Phoca vitulina</i>	South Kodiak	-, -, N	26,448 (N/A, 22,351, 2017)	939	127
Northern Elephant Seal	<i>Mirounga angustirostris</i>	CA Breeding	-, -, N	187,386 (N/A, 85,369, 2013)	5,122	13.7

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- 1 - Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (<https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies>).
 - 2 - 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: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. N/A indicates data are unknown. UND (undetermined) PBR indicates data are available to calculate a PBR level, but a determination has been made that calculating a PBR level using those data is inappropriate (see the SAR for details).
 - 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, ship 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 - The best available abundance estimate for this stock is not considered representative of the entire stock as surveys were limited to a small portion of the stock's range. Based upon this estimate and N_{min}, the PBR value is likely negatively biased for the entire stock.
 - 6 - New SAR in 2022 following North Pacific humpback whale stock structure changes.
 - 7 - Abundance estimates are based upon data collected more than 8 years ago and, therefore, current estimates are considered unknown.
 - 8 - PBR in U.S. waters = 0.2, M/SI in U.S. waters = 0.06.
 - 9 - Reliable population estimates are not available for this stock. Please see Friday *et al.* (2013) and Zerbini *et al.* (2006) for additional information on numbers of minke whales in Alaska.
 - 10 - Nest is based upon counts of individuals identified from photo-ID catalogs.
 - 11 - Survey years = Sea Lion Rock-2014; St. Paul and St. George Is - 2014, 2016, 2018; Bogoslof Is. - 2015, 2019.
 - 12 - Nest is best estimate of counts, which have not been corrected for animals at sea during abundance surveys. Estimates provided are for the U.S. only. The overall N_{min} is 73,211 and overall PBR is 439.

As indicated above, all 12 species (with 15 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 action area are included in table 3 of the IHA application. While North Pacific right whales, goose-beaked whales, and sperm whales have been reported in waters off Kodiak Island, 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. North Pacific right whales, goose-beaked whales, and sperm whales prefer deep, pelagic waters and are all considered to be rare (no sightings in recent years) within the project area. Take of these species has not been requested nor proposed to be authorized and these species are not considered further in this document.

In addition, the northern sea otter may be found in Kodiak, AK. However, northern sea otters are managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

Gray Whale

Gray whales are found most regularly throughout the North Pacific Ocean in shallow coastal waters, occasionally crossing deep waters during migration (NOAA Fisheries, 2023). Two distinct population segments (DPS) of gray whale occur in the north Pacific: the Eastern North Pacific DPS (delisted) and the Western North Pacific DPS (Endangered). The Eastern North Pacific DPS is more likely to occur near Kodiak Archipelago.

Some scientific and opportunistic data exists on gray whale presence near the project area. During aerial surveys in waters surrounding Kodiak Island conducted between 1999 and 2005 for Sea Grant Gulf Apex Predator-Prey Project, gray whales were primarily observed near Ugak Bay, approximately 79 (km) (49 mi) south of the project area (Sea Grant Alaska, 2012). Smaller numbers of gray whales were also observed approximately 8 km (5 mi) to the southeast of the project site, in Chiniak Bay (Sea Grant Alaska, 2012). During a ferry terminal reconstruction and dock improvement project completed in Kodiak Harbor, approximately 1.5 km (1 m) north of the site, monitors observed marine mammals during construction activities on 110 days between November 10, 2015, and June 16, 2016 (ABR, Inc., 2016). No gray whales were observed during that time.

Wild *et al.*, (2023) identified a Gray Whale Migratory Route Biologically Important Area (BIA) that intersects with a small portion of the project area during the months of January, March, April, May, November and December, with an importance score of 1 (the lowest of three possible scores (1, 2, or 3), reflecting an intensity score of 2 (indicating an area of moderate comparative significance) and a data support score of 1

(lower relative confidence in the available supporting data). Wild *et al.*, (2023) also identified the waters to the southeast of Kodiak Island as a BIA for gray whales for feeding during June through August, April and May, and September and October. However, this feeding BIA does not intersect with the project area.

Gray whales are typically solitary or travel in small groups (Frost and Karpovich, 2008) and are considered rare in the project area. While the shallow waters of St. Herman Harbor do not represent preferred habitat for large whales, given confirmed gray whale sightings in Chiniak Bay, and that the project area overlaps with a small portion of the migratory BIA for this species, gray whales could occur within the project area.

Fin Whale

Fin whales from the Northeast Pacific stock (ESA-Endangered) are known to occur within the waters surrounding Kodiak Island. During vessel transect surveys conducted along Western Alaska and the central Aleutian Islands between 2001 and 2003, fin whales were observed throughout a broad range, from the Kenai Peninsula to the Shumagin Islands. Notably, high concentrations were found in the coastal waters surrounding Kodiak Island (Zerbini *et al.*, 2006). This finding is corroborated by aerial surveys conducted from 1999 to 2005, which also indicate that some of the highest regional concentrations of fin whales occur in the Chiniak Trough South of Afognak Island and north of Kodiak Island in the Shelikof Strait (Sea Grant Alaska, 2012). These areas have deeper bathymetry than the project area and provide fin whales with direct access to open waters they typically inhabit.

Wild *et al.* (2023) identified the waters around Kodiak Island (including the proposed project area) as a BIA for fin whales for feeding during the months of June through September, with an importance score of 1 (the lowest of three possible scores (1, 2, or 3), reflecting an intensity score of 1 (indicating an area of lower comparative

significance) and a data support score of 2 (moderate relative confidence in the available supporting data).

Fin whales occur year-round near Kodiak Island, with peak sightings in spring and summer (Wynne and Witteveen, 2005). While the shallow-water characteristics of the project area are not consistent with fin whales' preferred habitat, they have recently been documented northwest of the action area in Marmot Bay (Happywhale, 2025). Additionally, fin whales are known to occur in coastal regions within the broader Gulf of Alaska, and a small portion of the feeding BIA overlaps with the project area. Therefore, fin whales have the potential to enter ensonified areas during construction for the SHHIRP.

Humpback Whale

Humpback whales are one of the most common marine mammal species in the Gulf of Alaska. In the project area, the Hawaii stock is the most predominant and accounts for approximately 89 percent of humpbacks occurring in the Gulf of Alaska. The Mexico-North Pacific stock is expected to represent approximately 11 percent, while the Western North Pacific stock represents less than 1 percent of humpbacks observed within the project areas (Wade, 2021).

Wild *et al.* (2023) identified the waters around and to the East of Kodiak Island (including the proposed project area) as a BIA for humpback whales for feeding during the months of May through September, with an importance score of 1 (the lowest of three possible scores (1, 2, or 3), reflecting an intensity score of 2 (indicating an area of moderate comparative significance) and a data support score of 1 (lower relative confidence in the available supporting data).

Humpback whales are common in the project area year-round with peaks during the spring and fall. They often feed in shallower waters closer to the coastline and have been documented in shallow coastal waters near Kodiak Island on some years (Baraff

2006; ABR, Inc. *et al.*, 2016). For example, during construction for the Kodiak Ferry Terminal and Dock Improvements Project from November 10, 2015, and June 16, 2016, one humpback whale was documented in the area in Kodiak, AK (ABR, Inc. *et al.*, 2016). Therefore, humpback whales have the potential to enter ensonified areas during project construction.

Minke Whale

Minke whales are found throughout the northern hemisphere in polar, temperate, and tropical waters. The International Whaling Commission has identified three minke whale stocks in the North Pacific: one near the Sea of Japan, a second in the rest of the western Pacific (west of 180° W), and a third, less concentrated stock throughout the eastern Pacific. NMFS further splits this third stock between Alaska whales and resident whales of California, Oregon, and Washington (Muto *et al.*, 2018). Minke whales are found in all Alaska waters; however, no population estimates are currently available for the Alaska stock.

Minke whale sightings are rare in the Gulf of Alaska, including near Kodiak. During the Gulf of Alaska Line-Transect Survey (GOALS) II, so few individuals were sighted in the central Gulf of Alaska that no abundance estimates could be computed (Rone *et al.*, 2017). Across 110 monitoring days between November 10, 2015, and June 16, 2016, no minke whales were observed during the ferry terminal reconstruction and dock improvement project in Kodiak Harbor (ABR, Inc. *et al.*, 2016). However, a few observations of minke whales were recorded in nearshore waters near Kodiak Island during line transect surveys conducted in central Alaska coastal waters (Zerbini *et al.*, 2006). They are often observed in groups of two or three (Guerrero, 2008).

Killer Whale

Killer whales have been observed in all oceans, but the highest densities occur in colder and more productive waters found at high latitudes. Killer whales occur along the

entire coast of Alaska (Braham and Dahlheim, 1982), inland waterways of British Columbia and Washington (Bigg *et al.*, 1990), and along the outer coasts of Washington, Oregon, and California (Green *et al.*, 1992; Barlow, 1995, 1997; Forney *et al.*, 1995). Resident killer whales in the eastern North Pacific primarily feed on salmonids, and show distinct preference for Chinook salmon, whereas transient killer whales primarily hunt and feed on marine mammals, including harbor seals, Dall's porpoise, harbor porpoises, and sea lions (Muto *et al.*, 2020). Eight stocks of killer whales are recognized within the Pacific U.S. Exclusive Economic Zone (Muto *et al.*, 2020).

The fish-eating Alaska resident stock of killer whale most commonly occurs in nearshore waters near the project area throughout the year. However, transient killer whales are also known to frequent the Kodiak Harbor area to hunt Steller sea lions during the months of February through May (UAF, 2015). During the Kodiak Ferry Terminal Improvements project, four pods of killer whales were observed in groups ranging from three to seven individuals across 110 days of monitoring between November 10, 2015, and June 16, 2016 (ABR, Inc. *et al.*, 2016). Therefore, it is expected that killer whales may occur in the project area during the proposed activities.

Pacific White-sided Dolphin

The Pacific white-sided dolphin is found in temperate waters of the North Pacific from the southern Gulf of California to Alaska. Across the North Pacific, it appears to occur between 33° N and 47 ° N (Young *et al.*, 2023; Waite and Sheldon, 2018). In the eastern North Pacific Ocean, the Pacific white-sided dolphin is one of the most common cetacean species, occurring primarily in shelf and slope waters (Green *et al.*, 1993; Barlow 2003, 2010). During winter, this species is most abundant in California slope and offshore areas; as northern waters begin to warm in the spring, it appears to move north to slope and offshore waters off Oregon/Washington (Green *et al.*, 1992, 1993; Forney *et al.*, 1995; Buchanan *et al.*, 2001; Barlow, 2003). White-sided are highly gregarious and

typically observed in groups from 10 to 100 individuals but groups can range into the thousands (Clark, 2008b; NMFS, 2022).

In the Gulf of Alaska, specifically within the project area, only the North Pacific stock is expected to occur during construction. In 2015, NOAA Fisheries Southwest Fisheries Science Center (SWFSC) in collaboration with NOAA Fisheries Alaska Fisheries Science Center, undertook a robust whale survey along the U.S. and Canadian Pacific coast (Weller, 2021). During the SWFSC survey several Pacific white-sided dolphins were sighted south of the project area between Chiniak and Sitkalidak Island (Weller, 2021). Across 110 monitoring days between November 10, 2015, and June 16, 2016, no Pacific white-sided dolphins were observed during the ferry terminal reconstruction and dock improvement project in Kodiak Harbor (ABR, Inc. *et al.*, 2016). Given their preference for deeper, pelagic waters, Pacific white-sided dolphins have the potential to occur near St. Herman Harbor, which is situated close to the edge of the continental shelf.

Dall's Porpoise

Dall's porpoise is found in temperate to subarctic waters of the North Pacific and adjacent seas (Jefferson *et al.*, 2015). It is widely distributed across the North Pacific over the continental shelf and slope waters, and over deep (greater than 2,500 m) oceanic waters (Friday *et al.*, 2012; Friday *et al.*, 2013). It is probably the most abundant small cetacean in the North Pacific Ocean, and its abundance changes seasonally, likely in relation to water temperature (Becker, 2007).

During three surveys from 2009 through 2015, Dall's porpoises were one of the most frequently observed marine mammal species in the Gulf of Alaska including inshore and continental shelf waters (Rone *et al.*, 2017). Similarly, in a survey conducted in 2012, one group of three Dall's porpoises were documented in 66 meters along the continental slope of Kodiak Island (Suzuki *et al.*, 2016). For the 110 days of monitoring from

November 10, 2015, through June 16, 2016, no Dall's porpoises were observed during the Kodiak Ferry Terminal Improvements Project (ABR, Inc. *et al.*, 2016). Since Dall's Porpoises are known to occur near Kodiak Island, they may occur in the project area during the proposed activities for the SHHIRP.

Harbor Porpoise

There are six harbor porpoise stocks in Alaska: the Bering Sea stock occurs throughout the Aleutian Islands and all waters north of Unimak Pass; the Gulf of Alaska stock occurs from Cape Suckling to Unimak Pass; the Northern Southeast Alaska Inland Waters stock includes Cross Sound, Glacier Bay, Icy Strait, Chatham Strait, Frederick Sound, Stephens Passage, Lynn Canal, and adjacent inlets; the Southern Southeast Alaska Inland Waters stock encompasses Sumner Strait, including areas around Wrangell and Zarembo Islands, Clarence Strait, and adjacent inlets and channels within the inland waters of Southeast Alaska north-northeast of Dixon Entrance; and the Yakutat/Southeast Alaska Offshore Waters stock includes offshore habitats in the Gulf of Alaska west of the Southeast Alaska inland waters and the areas around Yakutat Bay (Young *et al.*, 2023). Only harbor porpoise from the Gulf of Alaska stock is expected to be encountered in the project area.

During the 1992 National Marine Mammal Laboratory's Harbor Porpoise Aerial Survey conducted around Kodiak Island, dozens of harbor porpoises were spotted, with one documentation occurring within the action area (Dahlheim *et al.*, 2000). Group sizes reported during the same survey averaged 1.41 individuals (Dahlheim *et al.*, 2000). A total of six harbor porpoise were documented across 110 monitoring days between November 10, 2015, and June 16, 2016, during the ferry terminal reconstruction and dock improvement project in Kodiak Harbor (ABR, Inc. *et al.*, 2016). The largest group size was two. Considering that harbor porpoises are known to occur around Kodiak Island and

were observed during the Kodiak Ferry Terminal Improvements Project, they may occur in the project area during construction for the SHHIRP.

Northern Elephant Seal

Northern elephant seals breed and give birth in California (U.S.) and Baja California (Mexico), primarily on offshore islands (Stewart *et al.*, 1994), from December to March (NMFS 2015). Males migrate to the Gulf of Alaska and western Aleutian Islands along the continental shelf to feed on benthic prey, while females migrate to pelagic areas in the Gulf of Alaska and the central North Pacific Ocean to feed on pelagic prey (Le Boeuf *et al.*, 2000). Adults return to land between March and August to molt, with males returning later than females. Adults return to their feeding areas again between their spring/summer molting and their winter breeding seasons (Carretta *et al.*, 2015).

Northern elephant seals are uncommon in project area and are rarely seen as far north as Kodiak Island. However, the Sun'aq Tribe of Kodiak indicated that a northern elephant seal was observed near the project area for about 10 days in 2023.

Northern Fur Seal

Northern fur seals occur from southern California north to the Bering Sea and west to the Sea of Okhotsk and Honshu Island, Japan. During the summer breeding season, most of the worldwide population is found on the Pribilof Islands (St. Paul Island and St. George Island) in the southern Bering Sea, with the remaining animals on rookeries in Russia, on Bogoslof Island in the southern Bering Sea, on San Miguel Island off southern California, and on the Farallon Islands off central California (Muto *et al.*, 2022). Northern fur seals feed on a variety of prey including squid, walleye pollock (*Gadus chalcogrammus*), Pacific herring (*Clupea pallasii*), and capelin (*Mallotus villosus*) (Gomez *et al.*, 2015). Breeding and important haulouts areas are not expected to spatially overlap with the project area.

Northern fur seals inhabit deep pelagic waters for most of their lives. The closest documented occurrence occurred approximately 60 miles west of the project area (Hobbs, 2004). Across 110 monitoring days between November 10, 2015, and June 16, 2016, no northern fur seals were observed during the ferry terminal reconstruction and dock improvement project in Kodiak Harbor (ABR, Inc. *et al.*, 2016).

Steller Sea Lion

The Steller sea lion's range extends across the North Pacific Rim from northern Japan to California with areas of abundance in the Gulf of Alaska and Aleutian Islands (Muto *et al.*, 2020). In 1997, based on demographic and genetic dissimilarities, NMFS identified two DPSs of Steller sea lions under the ESA: a western DPS (western stock) and an eastern DPS (eastern stock). The western DPS breeds on rookeries located west of 144° W in Alaska and Russia, whereas the eastern DPS breeds on rookeries in southeast Alaska through California. Steller sea lions in the project area are anticipated to be part of the western DPS (western stock; Hastings *et al.*, 2020).

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.

Steller sea lion critical habitat in western Alaska includes a 20 nautical mile buffer around all major haulouts and rookeries as well as associated terrestrial, air and aquatic zones, and three large offshore foraging areas. The project area would overlap with the aquatic zone of Steller sea lion haulouts designated as critical habitat.

During aerial surveys in 2007 and 2008, Steller sea lions were regularly documented on haulouts around Kodiak Island, AK (Sea Grant Alaska, 2012). Similarly, during the Kodiak Island Ferry Terminal Improvements Project, 5,111 observations of individual Steller sea lions occurred across 110 monitoring days between November 10, 2015, and June 16, 2016 (ABR, Inc. *et al.*, 2016). Steller sea lions were most commonly observed hauled out on the Dog Bay Float, and the number of individuals hauled out ranged between 20 to over 100 individuals when counts occurred bi-weekly. Due to the presence of Steller sea lions on the Dog Bay Float and the close proximity of the SHHIRP to this float (200 m for Phase I and 300 m for Phase II), Steller sea lions are expected to occur in the project area on a daily basis throughout project activities.

Sightings of Steller sea lions in St. Herman Harbor are common, and animals have been observed hauled out on the Dog Bay Float all months except June and July. The Sun'aq Tribe of Kodiak conducted single day counts of Steller sea lions hauled out at the Dog Bay Float once per month during March, May, June, and September 2023; January, April, May, and October 2024; and March, May, July, and September 2025 (Van Daele, pers. comm., 2025). The maximum number of Steller sea lions observed in one day was 226 in May 2025, the minimum was 0 in June 2023 and July 2025. Throughout these float counts, individual Steller sea lions with brands or scars were re-sighted multiple times, suggesting that animals that use the float consists of a resident group of approximately 300 animals. Therefore, this resident group of Steller sea lions is expected to occur in the project area daily during construction for the SHHIRP.

Harbor Seal

Harbor seals are common in the coastal and inside waters of the project area. Harbor seals in Alaska are typically non-migratory with local movements attributed to factors such as prey availability, weather, and reproduction (Scheffer and Slipp, 1944; Fisher, 1952; Bigg 1969, 1981; Hastings *et al.*, 2004). Harbor seals haul out of the water

periodically to rest, give birth, and nurse their pups. There are 12 stocks of harbor seals in Alaska but only the South Kodiak stock is expected to occur in the project area.

Limited data exists for harbor seal in the project area, but animals have been documented during marine mammal monitoring for other coastal construction projects between the months of November and June (ABR, Inc. et al., 2016; Pacific Seafood, 2025). During Construction for the Kodiak Ferry Terminal Improvements Project, 13 harbor seals were observed over 110 monitoring days between November 10, 2015, and June 16, 2016 (ABR, Inc. et al., 2016). Considering that harbor seals are known to occur around Kodiak Island and were observed during the Kodiak Ferry Terminal Improvements Project, they may occur in the project area during construction for the SHHIRP.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (e.g., Richardson et al., 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall et al. (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Generalized hearing ranges were chosen based on the ~65 decibel (dB) threshold from composite audiograms, previous analyses in NMFS (2018), and/or data from Southall et al. (2007) and Southall et al. (2019). We note that the names of two hearing groups and the generalized hearing ranges of all marine mammal hearing groups have been recently updated (NMFS, 2024) as reflected below in table 4.

Table 4-- Marine Mammal Hearing Groups (NMFS, 2024)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 36 kHz
High-frequency (HF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
Very High-frequency (VHF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	200 Hz to 165 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	40 Hz to 90 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 68 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges may not be as broad. Generalized hearing range chosen based on ~65 dB threshold from composite audiogram, previous analysis in NMFS 2018, and/or data from Southall <i>et al.</i> (2007, 2019). Additionally, animals are able to detect very loud sounds above and below that “generalized” hearing range.	

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

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section 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 and the **Proposed Mitigation** section 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 (American National Standards Institute (ANSI), 1995). The sound level of an area is defined by the total acoustic 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 activities may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction associated with the proposed project would include vibratory and impact pile driving, DTH drilling, vibratory pile removal, and hydraulic rock hammering. The sounds produced by these activities fall into one of two general

sound types: impulsive and non-impulsive (defined below). 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). Please see Southall *et al.* (2007) for an in-depth discussion of these concepts.

Impulsive sound sources (*e.g.*, explosions, gunshots, sonic booms, impact pile driving) are brief (typically considered to be less than 1 second), broadband, atonal transients (ANSI, 1986; National Institute for Occupational Safety and Health (NIOSH), 1998; International Organization for Standardization (ISO) 2003; ANSI, 2005; NMFS, 2018) and occur either as isolated events or repeated in some succession. Impulsive sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

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 rapid rise/decay time that impulsive sounds do (ANSI, 1995; NIOSH, 1998; NMFS, 2018). 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).

The SHHIRP projects would include the use of impact, vibratory, and DTH hammers for pile installation and vibratory hammers for pile removal. 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 and 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 DTH systems contain both a continuous, non-impulsive component from the drilling action and an impulsive component from the hammering effect. Therefore, NMFS treats DTH systems as both impulsive (for estimating Level A harassment zones) and non-impulsive (for estimating Level B harassment zones) sound source types simultaneously.

Hydraulic rock hammers (*i.e.*, hoe rams) are impact devices that would be used to break up bedrock prior dredging. Hydraulic rock hammers operate by using rock hammer operates by using a chisel-like hammer to rapidly strike an exposed surface to break it up into smaller pieces that will be removed by a clamshell dredge or bucket excavator, as appropriate. Few data exist regarding the underwater sounds produced by rock hammers. Data reported by Escude (2012), however, suggest that the sounds produced by hoe rams are comparable to impact hammers. Therefore, for the purposes of this analysis, it is assumed that hydraulic rock hammers act as an impulsive source characterized by rapid rise times and high peak levels.

The likely or possible impacts of the City of Kodiak’s proposed activities on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-

acoustic stressors could result from the physical presence of the equipment and personnel; however, any impacts to marine mammals are expected to primarily be acoustic in nature.

Potential Effects of Underwater Sound on Marine Mammals

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal, DTH drilling, and hydraulic rock hammering is the means by which marine mammals may be harassed from the City of Kodiak's specified activities.

Anthropogenic sounds cover a broad range of frequencies and sound levels and can have a range of highly variable impacts on marine life from none or minor to potentially severe responses depending on received levels, duration of exposure, behavioral context, and various other factors. Broadly, underwater sound from active acoustic sources, such as those in the projects, can potentially result in one or more of the following: temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking (Richardson *et al.*, 1995; Gordon *et al.*, 2003; Nowacek *et al.*, 2007; Southall *et al.*, 2007; Götz *et al.*, 2009).

We describe the more severe effects of certain non-auditory physical or physiological effects only briefly as we do not expect that use of pile driving hammers (impact, vibratory, and DTH) are reasonably likely to result in such effects (see below for further discussion). Potential effects from impulsive sound sources can range in severity from effects such as behavioral disturbance or tactile perception to physical discomfort, slight injury of the internal organs and the auditory system, or mortality (Yelverton *et al.*, 1973). Non-auditory physiological effects or injuries that theoretically might occur in marine mammals exposed to high level underwater sound or as a secondary effect of extreme behavioral reactions (*e.g.*, change in dive profile as a result of an avoidance reaction) caused by exposure to sound include neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage (Cox *et al.*, 2006; Southall *et*

al., 2007; Zimmer and Tyack, 2007; Tal *et al.*, 2015). The Project activities considered here do not involve the use of devices such as explosives or mid-frequency tactical sonar that are associated with these types of effects.

In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.*, 2007, 2019). Exposure to anthropogenic noise 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). It can also lead to non-observable physiological responses, such as 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 degree of effect of an acoustic exposure on marine mammals is dependent on several factors, including, but not limited to, sound type (*e.g.*, impulsive vs. non-impulsive), signal characteristics, the species, age and sex class (*e.g.*, adult male vs. mom with calf), duration of exposure, the distance between the noise source and the animal, received levels, behavioral state at time of exposure, and previous history with exposure (Wartzok *et al.*, 2004; Southall *et al.*, 2007). In general, sudden, high-intensity sounds can cause hearing loss as can longer exposures to lower-intensity sounds. Moreover, any temporary or permanent loss of hearing, if it occurs at all, will occur almost exclusively for noise within an animal's hearing range. We describe below the specific manifestations of acoustic effects that may occur based on the activities proposed by the City of Kodiak.

Richardson *et al.* (1995) described zones of increasing intensity of effect that might be expected to occur in relation to distance from a source and assuming that the signal is within an animal's hearing range. First (at the greatest distance) is the area within which the acoustic signal would be audible (potentially perceived) to the animal

but not strong enough to elicit any overt behavioral or physiological response. The next zone (closer to the receiving animal) corresponds with the area where the signal is audible to the animal and of sufficient intensity to elicit behavioral or physiological responsiveness. The third is a zone within which, for signals of high intensity, the received level is sufficient to potentially cause discomfort or tissue damage to auditory or other systems. Overlaying these zones to a certain extent is the area within which masking (*i.e.*, when a sound interferes with or masks the ability of an animal to detect a signal of interest that is above the absolute hearing threshold) may occur; the masking zone may be highly variable in size.

Below, we provide additional detail regarding potential impacts on marine mammals and their habitat from noise in general, starting with hearing impairment, as well as from the specific activities the City of Kodiak plans to conduct, to the degree it is available.

Auditory Injury (AUD INJ)—NMFS defines auditory injury as “damage to the inner ear that can result in destruction of tissue . . . which may or may not result in permanent threshold shift (PTS)” (NMFS, 2024). AUD INJ may or may not result in a 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 ANSI, 1995; Yost, 2007). A variety of terrestrial and marine mammal studies (*e.g.*, Ward *et al.*, 1958; Ward *et al.*, 1959; Ward, 1960; Miller *et al.*, 1963; Kryter *et al.*, 1966; Finneran *et al.*, 2007; Kastelein *et al.*, 2013) indicate that threshold shifts of up to 40 to 50 dB (measured a few minutes after exposure) may be induced without resulting in PTS. Therefore, an exposure producing an initial threshold shift of 40 dB is considered the minimum upper limit for a reversible threshold shift and any additional exposure could result in some PTS. Thus, NMFS has set the PTS onset as a threshold shift of 40 dB. However, after

sound exposure ceases or between successive sound exposures, the potential for recovery from hearing loss exists. Thus, because a threshold shift is measured a few minutes after noise exposure does not mean that those initial shifts are persistent (*i.e.*, no recovery). When initial threshold shifts fully recover back to baseline hearing levels, these are considered TTS. PTS indicates that there is not full recovery back to baseline hearing levels, but it does not mean that there is no recovery. Rather PTS indicates that there is incomplete recovery. Recovery is dependent on the initial threshold shift amount, the frequency where the shift occurred, temporal pattern of exposure (*e.g.*, exposure duration; continuous vs. intermittent or interrupted exposure), and physiological mechanisms associated with the shift (*e.g.*, mechanical vs. metabolic, recovery processes within cochlea). Since recovery is complicated, our current AUD INJ onset criteria do not account for the potential for recovery.

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 (Southall *et al.*, 2007, 2019), a TTS of 6 dB is considered the minimum TS 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 (SEL_{cum}) in an accelerating fashion: At low exposures with lower SEL_{cum}, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SEL_{cum}, 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). TTS is the mildest form of hearing impairment that can occur during exposure to sound (Kryter, 2013). While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends. For pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals (*Mirounga angustirostris*), bearded seals (*Erignathus barbatus*) and California sea lions (*Zalophus californianus*) (Kastak *et al.*, 1999, 2007; Kastelein *et al.*, 2019b, 2019c, 2021, 2022a, 2022b; Reichmuth *et al.*, 2019; Sills *et al.*, 2020). These studies examined hearing thresholds measured in marine mammals before and after exposure to intense or long-duration sound exposures. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of TS 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 for a species or hearing group, 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, 2019c). Note that in general, harbor seals have a lower TTS onset than other measured pinniped species (Finneran, 2015). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Mooney *et al.*, 2009; Finneran *et al.*, 2010; Kastelein *et al.*, 2014, 2015). This means that TTS predictions based on the total, SEL_{cum} will overestimate the amount of TTS from intermittent exposures, such as sonars and impulsive sources. Nachtigall *et al.* (2018) describes measurements of hearing sensitivity of multiple odontocete species (*i.e.*, 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). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species.

Relationships between TTS and PTS thresholds have not been studied in marine mammals, but such relationships are assumed to be similar to those in humans and other terrestrial mammals. PTS typically occurs at exposure levels at least several dBs above

that inducing mild TTS (*e.g.*, a 40-dB TS approximates PTS onset (Kryter *et al.*, 1966; Miller, 1974)), while a 6-dB TS approximates TTS onset (Southall *et al.*, 2007, 2019). Based on data from terrestrial mammals, a precautionary assumption is that the PTS thresholds for impulsive sounds (such as impact pile driving pulses as received close to the source) are at least 6 dB higher than the TTS threshold on a peak-pressure basis and PTS SELcum thresholds are 15 to 20 dB higher than TTS SELcum thresholds (Southall *et al.*, 2007, 2019).

Construction at SHHIRP would require a combination impact and vibratory pile driving and removal, DTH drilling, and hydraulic rock hammering. Construction for each phase of the SHHIRP would be independent both spatially and temporally. Only one method of pile installation, pile removal or hydraulic rock hammering would occur at a time, although multiple methods may be used in the same day. Proposed construction activities for each phase are not expected to be constant and pauses in the activities producing sound are likely to occur each day. Given these pauses and that many marine mammals are likely moving through the project areas and not remaining for extended periods of time, the potential for TS declines. For Steller sea lions, animals are expected to remain in project area, particularly around the Dog Bay float. Animals swimming with heads underwater would be exposed to pile driving noise throughout a day on multiple days, increasing risk of TS. However, we also expect these individuals to remain out of the water on the float for extended durations which reduces risk of TS.

Behavioral Harassment—Exposure to noise from pile installation, pile removal, DTH drilling, and rock hammering also have 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; NRC, 2005).

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.*, 2004; Southall *et al.*, 2007, 2021; Weilgart, 2007; Archer *et al.*, 2010). Behavioral reactions can vary not only among individuals but also within exposures of an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.*, 2012; Southall *et al.*, 2021), 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. For a review of the studies involving marine mammal behavioral responses to sound, see Southall *et al.*, 2007; Gomez *et al.*, 2016; and Southall *et al.*, 2021 reviews.

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 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.

Airborne Acoustic Effects—Pinnipeds that occur near the project sites could be exposed to airborne sounds associated with pile installation, pile removal, or DTH drilling that have the potential to cause behavioral harassment, depending on their distance from the activities. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project sites within the range of noise levels elevated above the airborne acoustic harassment criteria. We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when swimming with their heads above water. Most likely, airborne sound would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled-out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to temporarily abandon the area and move further from the source. However, these animals would previously have been 'taken' because of exposure to underwater sound above the behavioral harassment

thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

Stress Response—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; Krausman *et al.*, 2004; 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 (NRC, 2005), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar construction projects around Kodiak Island.

Auditory 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; Erbe *et al.*, 2016). 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.*, 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.

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

The frequency range of the potentially masking sound is important in determining any potential behavioral impacts. For example, low-frequency signals may have less effect on high-frequency echolocation sounds produced by odontocetes but are more likely to affect detection of mysticete communication calls and other potentially important natural sounds such as those produced by surf and some prey species. The masking of communication signals by anthropogenic noise may be considered as a reduction in the communication space of animals (*e.g.*, Clark *et al.*, 2009) and may result in energetic or other costs as animals change their vocalization behavior (*e.g.*, Miller *et al.*, 2000; Foote *et al.*, 2004; Parks *et al.*, 2007; Di Iorio and Clark, 2009; Holt *et al.*,

2009). Masking can be reduced in situations where the signal and noise come from different directions (Richardson *et al.*, 1995), through amplitude modulation of the signal, or through other compensatory behaviors (Houser and Moore, 2014). Masking can be tested directly in captive species (*e.g.*, Erbe, 2008), but in wild populations it must be either modeled or inferred from evidence of masking compensation. There are few studies addressing real-world masking sounds likely to be experienced by marine mammals in the wild (*e.g.*, Branstetter *et al.*, 2013).

Masking affects both senders and receivers of acoustic signals and can potentially have long-term chronic effects on marine mammals at the population level as well as at the individual level. Low-frequency ambient sound levels have increased by as much as 20 dB (more than three times in terms of SPL) in the world's ocean from pre-industrial periods, with most of the increase from distant commercial shipping (Hildebrand, 2009). All anthropogenic sound sources, but especially chronic and lower-frequency signals (*e.g.*, from vessel traffic), contribute to elevated ambient sound levels, thus intensifying masking. The SHHIRP project is located in an area with commercial and recreational fishing, recreational boating, ferry operations, and includes routine vessel traffic; therefore, background sound levels are generally already elevated.

Marine Mammal Habitat Effects

Proposed construction for Phase I and II of the SHHIRP could have localized, temporary impacts on marine mammal habitat, including prey, by increasing in-water SPLs and slightly decreasing water quality. Increased noise levels may affect acoustic habitat (see Auditory Masking) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During DTH drilling, impact and vibratory pile driving, and hydraulic rock hammering 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.

Water Quality—In-water DTH Drilling, pile driving, pile removal, rock hammering, and dredging activities would also cause short-term effects on water quality due to increased turbidity. Temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding where piles are installed or removed and where rock hammering or dredging will occur, due to benthic sediment disturbance. 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 suspended solids from disturbed sediment at project sites would settle out of the water column within a few hours. Studies of the effects of turbid water on fish (marine mammal prey) suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993).

Effects from turbidity and sedimentation are expected to be short-term, minor, and localized. Suspended solids in the water column should dissipate and quickly return to background levels in all construction scenarios. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish species in the proposed project area. However, suspended sediment associated with the project would be temporary and localized, and fish in the proposed project area would be able to move away from and avoid the areas where plumes may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary. In general, the area likely impacted by the proposed construction activities is relatively small compared to the total available marine mammal habitat as well as the critical habitat and the BIAs around Kodiak, AK. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

In-water Effects on Potential Foraging Habitat—The proposed activities would not result in permanent impacts to habitats used directly by marine mammals and no increases in vessel traffic are expected in either location as a result of the specified activities. The areas likely impacted by the proposed actions are relatively small compared to the total available habitat in the Gulf of Alaska and the water surrounding Kodiak Island. The proposed project areas are highly influenced by anthropogenic activities and provide limited foraging habitat for marine mammals. The total seafloor area affected by piling activities is small compared to the vast foraging areas available to marine mammals surrounding proposed construction sites. At best, the area impacted provide marginal foraging habitat for marine mammals and fishes. Furthermore, pile driving, pile removal and hydraulic rock hammering would not obstruct movements or migration of marine mammals.

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

Fish react to sounds 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, several of which are based on studies in support of large, multiyear bridge construction projects (*e.g.*, Scholik and Yan, 2001; Popper and Hastings, 2009). Many 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.*, Pearson *et al.*, 1992; Skalski *et al.*, 1992; Santulli *et al.*, 1999; Fewtrell and McCauley, 2012; Paxton *et al.*, 2017). In response to pile driving, Pacific sardines (*Sardinops sagax*) and northern anchovies (*Engraulis mordax*) may exhibit an immediate startle response to individual strikes but return to “normal” pre-strike behavior following the conclusion of pile driving with no evidence of injury as a result (see NAVFAC, 2014). However, some studies have shown no or slight reaction to impulse sounds (*e.g.*, Wardle *et al.*, 2001; Popper *et al.*, 2005; Jorgenson and Gyselman, 2009; Peña *et al.*, 2013).

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 is likely restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012b) 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.*, 2012a; Casper *et al.*, 2013) and the greatest

potential effect on fish during the proposed project would occur during impact pile driving, if it is required. However, the duration of impact pile driving would be limited to a contingency in the event that vibratory driving does not satisfactorily install the pile depending on observed soil resistance. In-water construction activities would only occur during daylight hours allowing fish to forage and transit the project area at night. Vibratory pile driving may elicit behavioral reactions from fish such as temporary avoidance of the area but is unlikely to cause injuries to fish or have persistent effects on local fish populations. In addition, it should be noted that the area in question is low-quality habitat since it is already developed and experiences anthropogenic noise from routine vessel traffic.

The most likely impact to fishes from pile driving, pile removal, DTH drilling, and hydraulic rock hammering in the project area would be temporary behavioral avoidance of the area. The duration of fish avoidance of the area after pile driving stops is unknown but a rapid return to normal recruitment, distribution, and behavior is anticipated. There are times of known seasonal marine mammal foraging when fish are aggregating but the impacted areas are small portions of the total foraging habitats available in the regions. In general, impacts to marine mammal prey species are expected to be minor and temporary. Further, it is anticipated that preparation activities for pile driving and DTH drilling (*i.e.*, positioning of the hammer) and upon initial startup of devices would cause fish to move away from the affected area where injuries may occur. Therefore, relatively small portions of the proposed project areas would be affected for short periods of time, and the potential for effects on fish to occur would be temporary and limited to the duration of sound-generating activities.

Construction activities, in the form of increased turbidity, also have the potential to adversely affect forage fish in the project area. Pacific herring (*Clupea pallasii*) is a primary prey species of Steller sea lions, humpback whales, and many other marine

mammal species that occur in the project areas. As discussed earlier, increased turbidity is expected to occur in the immediate vicinity (approximately 25 ft (7.6 m) or less) of construction activities (Everitt *et al.*, 1980). However, suspended solids 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 addition, best management practices would be in effect to limit the extent of turbidity to the immediate project areas. Finally, exposure to turbid waters from construction activities is not expected to be different from the current exposure; fish and marine mammals in the regions are routinely exposed to substantial levels of suspended sediment from glacial sources.

In summary, given the short daily duration of sound associated with pile driving, DTH drilling, and hydraulic rock hammering and the relatively small areas being affected by these activities associated with the proposed actions are not likely to have a permanent adverse effect on any fish habitat, or populations of fish species. 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 the IHAs, which will inform NMFS' consideration of "small numbers," the negligible impact determinations, and impacts on subsistence uses.

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

harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, impact, and vibratory pile driving; DTH drilling; vibratory pile removal; and hydraulic rock hammering) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for AUD INJ (Level A harassment) to result, primarily for Dall's porpoise, harbor porpoise, harbor seal, and Steller sea lion because predicted AUD INJ zones are larger than for other species and those four species are more commonly seen within the area. AUD INJ is unlikely to occur for gray whale, minke whale, fin whale, humpback whale, Pacific white-sided dolphin, killer whale, northern fur seal, and northern elephant seal. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

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

results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Criteria

NMFS recommends the use of acoustic criteria that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur AUD INJ of some degree (equated to Level A harassment). Criteria for AUD INJ, and hearing group categories are available in NMFS' Updated Technical Guidance (NMFS 2024) and are reflected below in the Level A harassment section.

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 μ Pa)) for continuous (*e.g.*, vibratory pile driving, drilling) and above RMS SPL 160 dB re 1 μ Pa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral

harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

The City of Kodiak’s proposed activities includes the use of continuous (vibratory pile driving/removal and DTH drilling) and intermittent (impact pile driving, DTH drilling, and hydraulic rock hammering) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 µPa, respectively, are applicable.

Level A harassment – NMFS’ Updated Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) (Updated Technical Guidance, 2024) identifies dual criteria to assess AUD INJ (Level A harassment) to five different underwater marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The City of Kodiak’s proposed activity includes the use of impulsive (impact pile driving, hydraulic rock hammering, and DTH drilling) and non-impulsive (vibratory pile driving/removal and DTH drilling) sources.

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

Table 5 -- Thresholds Identifying the Onset of Auditory Injury

	AUD INJ Onset Acoustic Thresholds* (Received Level)
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Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 222 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 197 dB
High-Frequency (HF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,HF,24h}$: 193 dB	<i>Cell 4</i> $L_{E,HF,24h}$: 201 dB
Very High-Frequency (VHF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,VHF,24h}$: 159 dB	<i>Cell 6</i> $L_{E,VHF,24h}$: 181 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 223 dB $L_{E,PW,24h}$: 183 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 195 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 230 dB $L_{E,OW,24h}$: 185 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 199 dB
<p>*Dual metric criteria for impulsive sounds: Use whichever criteria results in the larger isopleth for calculating AUD INJ onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level criteria associated with impulsive sounds, the PK SPL criteria are recommended for consideration for non-impulsive sources.</p> <p>Note: Peak sound pressure level ($L_{p,0-pk}$) has a reference value of 1 μPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1 μPa²s. In this table, criteria are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript “flat” is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals underwater (<i>i.e.</i>, 7 Hz to 165 kHz). The subscript associated with cumulative sound exposure level criteria indicates the designated marine mammal auditory weighting function (LF, HF, and VHF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level criteria could be exceeded in a multitude of ways (<i>i.e.</i>, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these criteria will be exceeded.</p>		

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 (TL) coefficient.

The sound field in the proposed 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 Phase I and II of the SHHIRP activities (*i.e.*, pile installation, pile removal, DTH drilling and hydraulic rock hammering).

The source levels assumed for pile installation, pile removal, and rock hammering activities are based on reviews of measurements of the same or similar types and dimensions of piles and rock hammering activities from similar coastal construction

projects. We note that the City of Kodiak proposed a source level of 155 dB RMS SPL for the vibratory installation of 16- to 18-inch steel piles during Phase II of the SHHIRP Project, citing Denes *et al.* (2016). However, NMFS has determined that use of this proxy source level in this location is not appropriate; the substrate in Kake, AK, where the data in Denes *et al.* (2016) were collected is primarily mud, and source levels recorded at that location are consistently lower than those measured elsewhere in Alaska (Navy 2012, 2013; Minor 2020). Consequently, NMFS applied a more appropriate source level of 163 dB RMS SPL to 16- and 18-in piles. These source levels were derived from recordings in Bangor, Washington, and Gustavus, Alaska, where pile sizes and substrate are similar to the project area.

Table 6 -- Estimated Source Levels (at 10 m), by pile size, type and activity, for the SHHIRP.

Pile size and type	RMS SPL (dB re 1 μPa)	SEL (dB re 1 μPa ² -sec)	Peak SPL (dB re 1 μPa)	Reference
Vibratory pile installation and removal				
12- to 20-inch steel piles (removal)	163	N/A	N/A	Naval Base Kitsap Bangor Test Pile (Navy (2012)) and EHW-2 (Navy (2013)), Gustavus (Minor, 2020)
16- to 24-inch steel piles	163	N/A	N/A	Naval Base Kitsap Bangor Test Pile (Navy (2012)) and EHW-2 (Navy (2013)), Gustavus (Minor, 2020)
30-inch steel piles	166	N/A	N/A	Denes et al. 2016 (Auke Bay, Ketchikan, Kake), Edmonds Ferry Terminal (Laughlin 2011, 2017), Colman Dock - Seattle Ferry Terminal (Laughlin 2012), Kodiak Pier 3 (PND Engineers, 2015)
Impact pile installation				
16- to 18-inch steel piles	185	175	200	Caltrans 2020
20- to 24-inch steel piles	190	177	203	Caltrans 2015
30-inch steel piles	190	177	210	Caltrans 2015
DTH pile drilling				
16-18-inch steel piles	167	146	172	Guan and Miner 2020; Heyvaert and Reyff 2021
20-24-inch steel piles	167	159	184	Heyvaert and Reyff 2021
30-inch steel piles	174	164	194	Denes et al. 2019; Reyff and Heyvaert 2019; Reyff 2020; Heyvaert and Reyff 2021
Hydraulic hammering/ rock fracturing				

Hydraulic hammering/ rock fracturing	186	171	197	Escude 2012
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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:

$$TL = B \times \text{Log}_{10}(R1/R2),$$

Where:

TL = transmission loss in dB,

B = transmission loss coefficient,

R1 = the distance of the modeled SPL from the driven pile, and

R2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source depends on various factors, most notably the water bathymetry and the presence or absence of reflective or absorptive conditions, including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source ($20 \cdot \log[\text{range}]$). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ($10 \cdot \log[\text{range}]$). A practical spreading value of 15 is often used in shallow-water coastal conditions, such as those found in St. Herman Harbor. In these environments, sound waves repeatedly reflect off the surface and bottom, reflecting an expected propagation environment between spherical and cylindrical spreading-loss conditions.

Site-specific TL data for St. Herman Harbor is not available; therefore, the default coefficient of 15 is used to calculate distances to the Level A harassment and Level B harassment thresholds. Assuming practicable spreading and other assumptions regarding the source characteristics and operational logistics (e.g., source level, number of strikes per pile, number of piles per day), the City of Kodiak and NMFS calculated distances to the Level A harassment and Level B harassment thresholds and associated ensonified areas. Because an ensonified area associated with Level A harassment is more technically challenging to predict given the accounting for a cumulative energy component that changes over time, to assist applicants in assessing the potential for Level A harassment without the need for complex modeling, NMFS developed an optional User Spreadsheet tool to accompany the 2024 Updated Technical Guidance (see <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance-other-acoustic-tools>). This relatively simple tool can be used to calculate a Level A harassment isopleth distance for use in conjunction with marine mammal density or occurrence data to predict the amount of take that may occur incidental to an activity. We note that, because of some of the assumptions in the methods underlying this spreadsheet tool, we anticipate that the resulting isopleths would typically be overestimates, which may lead to an overestimate of potential exposures from 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 pile installation, pile removal, DTH drilling, and hydraulic rock hammering, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur AUD INJ. Inputs used in the optional User Spreadsheet tool, and the resulting estimated isopleths, are reported in table 7 through 10 below.

Discrepancies between the distances and associated areas to thresholds presented in Table

10 and the City of Kodiak's application for 16- and 18-in piles result from different source levels used by NMFS as described above.

Table 7 -- NMFS User Spreadsheet Inputs for Phase I of the SHHIRP
Table 8 -- NMFS User Spreadsheet inputs for Phase II of the SHHIRP

Pile size and material	Spreadsheet tab used	Source level (SPL)	Weighting factor adjustment	Transmission loss coefficient	Activity duration (minutes)	Number of strikes per pile (impact) or repetition rate (DTH)	Number of piles per day or total	Distance of sound pressure level measurement (m)
24-inch steel	A.1) Vibratory Pile Driving	163 dB RMS	2.5	15	20	N/A	6	10
30-inch steel		166 dB RMS	2.5	15	20	N/A	6	10
16- to 18-inch steel	A.1)	163 dB RMS	2.5	15	20	N/A	6	10
24-inch steel	A.1) Vibratory Pile Driving	163 dB RMS	2.5	15	20	N/A	6	10
24-inch steel ^a		163 dB RMS	2.5	15	20	N/A	6	10
24-inch steel ^a to 20-inch steel	E.1) Impact Vibratory Pile Driving	177 dB SEL	2	15	15	300	6	10
24-inch steel Removal ^b		177 dB SEL	2.5	15	45	N/A	20	10
30-inch steel ^a	Driving	177 dB SEL	2.5	15	45	N/A	66	100
Impact pile driving								
24-inch steel		175 dB SEL	22	15	45	1,800	66	100
16-inch steel	E.2) DTH Systems	175 dB SEL	22	15	45	1,800	66	100
18-inch steel		175 dB SEL	22	15	45	1,800	66	100
30-inch steel	Impact Pile	174 dB SEL	22	15	45	1,800	66	100
DTH pile drilling								
16-inch steel		146 dB SEL	2	15	150	10 ^c	6	10
18-inch steel		146 dB SEL	2	15	150	10 ^c	6	10
20-inch steel	E.2) DTH Systems	159 dB SEL	2	15	150	10 ^c	6	10
24-inch steel		159 dB SEL	2	15	150	10 ^c	6	10
24-inch steel ^a		159 dB SEL	2	15	120	10 ^c	6	10
Hydraulic rock hammering								
Rock hammering	E: Stationary source	171 dB SEL	2	15	250	24,000	1,900	10

^a Not in N/A area. Indicates temporary piles

^b The City of Kodiak estimates a repetition rate of 10 Hz which falls within the range measured during other projects in Southeast Alaska (Heyyaert and Reyff, 2021; DSEL et al., 2016) While actual repetition rate may be higher, for purposes of this analysis, 10 Hz is a reasonable value to apply.

^c DTH pile drilling

Note: N/A means not applicable

^a indicates temporary piles

^b indicates existing piles

^c The City of Kodiak estimates a repetition rate of 10 Hz which falls within the range measured during other projects in Southeast Alaska (Heyvaert and Reyff, 2021; Denes *et al.*, 2016) While actual repetition rate may be higher, for purposes of this analysis, 10 Hz is a reasonable value to apply.

Table 9 -- Projected Distances to Level A Harassment and Level B Harassment Isoleths (m) and associated areas (km²) by Marine Mammal Hearing Groups for Vibratory Installation and Removal, Impact Installation, and DTH drilling of Piles for Phase I of the SHHIRP.

Pile size and material	Level A Harassment Distance (m), (Area(km ²))					Level B Harassment Distance (m), (Area(km ²))
	Low Frequency Cetaceans	High Frequency Cetaceans	Very High Frequency Cetaceans	Phocids	Otariids	
Vibratory pile driving						
24-inch steel ^a	19.9 (0.014)	7.6 (0.004)	16.3 (0.011)	25.6 (0.018)	8.6 (0.006)	7,356 (6.641)
30-inch steel	31.5 (0.023)	12.1 (0.008)	25.8 (0.018)	40.6 (0.03)	13.7 (0.009)	11,659 (9.263)
Impact pile driving						
24-inch steel ^b	586.1 (0.44)	74.8 (0.06)	907.1 (0.664)	520.7 (0.399)	194.1 (0.191)	1,000 (0.71)
24-inch steel	1,935.4 (1.191)	246.9 (0.239)	2,995.1 (2.128)	1,719.3 (1.052)	640.9 (0.475)	1,000 (0.71)
30-inch steel	1,935.4 (1.191)	246.9 (0.239)	2,995.1 (2.128)	1,719.3 (1.052)	640.9 (0.475)	1,000 (0.71)
DTH pile drilling						
24-inch steel ^b	1,428.3 (0.893)	1,82.2 (0.177)	2,210.3 (1.393)	1,268.8 (0.819)	473 (0.37)	13,594 (9.269) ^{c, d}
24-inch steel	1,657.4 (1.016)	211.5 (0.208)	2,564.8 (1.696)	1,472.3 (0.915)	548.8 (0.417)	13,594 (9.269) ^{c, d}
30-inch steel	3,570.7 (2.815)	455.6 (0.359)	5,525.7 (5.241)	3,172.1 (2.33)	1,185.4 (0.783)	39,811 (9.269) ^{c, d}

^a indicates both temporary and permanent piles

^b indicates temporary piles only

^c Distances represent the calculated radius of the zone. The actual zone may be truncated by landforms.

^d Areas of zones accounting for truncation by landforms.

Table 10 -- Projected Distances to Level A Harassment and Level B Harassment Isoleths (m) and associated areas (km²) by Marine Mammal Hearing Groups for Vibratory Installation and Removal, Impact Installation, and DTH drilling of Piles and Hydraulic Rock Hammering for Phase II of the SHHIRP.

Pile size and material	Level A Harassment Distance (m), (Area(km ²))					Level B Harassment Distance (m), (Area(km ²))
	Low Frequency Cetaceans	High Frequency Cetaceans	Very High Frequency Cetaceans	Phocids	Otariids	
Vibratory pile driving						
12- to 20-inch piles ^a	28 (0.0256)	10.7 (0.01)	22.9 (0.022)	36 (0.031)	12.1 (0.012)	7,356 (6.399)

16- or 18-inch steel piles	19.9 (0.019)	7.6 (0.007)	16.3 (0.016)	25.6 (0.024)	8.6 (0.008)	7,356 (6.399)
20- to 24-inch steel piles ^b	19.9 (0.019)	7.6 (0.007)	16.3 (0.016)	25.6 (0.024)	8.6 (0.008)	7,356 (6.399)
Impact pile driving						
16- to 18-inch steel piles	1,423.8 (0.831)	181.7 (0.117)	2,203.3 (1.224)	1,264.8 (0.778)	471.5 (0.437)	464 (0.428)
24-inch steel piles ^c	586.1 (0.552)	74.8 (0.05)	907.1 (0.679)	520.7 (0.494)	194.1 (0.127)	1,000 (0.703)
20- to 24-inch steel	1,935.4 (1.063)	246.9 (0.174)	2,995.1 (1.856)	1,719.3 (0.953)	640.9 (0.59)	1,000 (0.703)
DTH pile drilling						
16- or 18-inch steel	225.3 (0.154)	28.7 (0.026)	348.6 (0.289)	200.1 (0.131)	74.6 (0.05)	13,594 ^{d, e} (9.159)
24-inch steel piles ^c	1,428.3 (0.832)	182.2 (0.117)	2,210.3 (1.228)	1,268.8 (0.779)	473 (0.439)	13,594 ^{d, e} (9.159)
20- or 24-inch steel	1,657.4 (0.925)	211.5 (0.141)	2,564.8 (0.1555)	1,472.3 (0.848)	548.8 (0.518)	13,594 ^{d, e} (9.159)
Rock hammering						
Rock hammering	609 (0.252)	77.7 (0.034)	942.5 (0.331)	541 (0.227)	201.7 (0.095)	541 (0.227)

^a indicates removal of existing piles

^b indicates both temporary and permanent piles

^c indicates installation of temporary piles only

^d Distances represent the calculated radius of the zone. The actual zone may be truncated by landforms.

^e Areas of zones accounting for truncation by landforms.

Level A harassment zones are typically smaller than Level B harassment zones. However, in rare cases such as during impact driving of 24- and 30-inch permanent steel piles for Phase I and during impact driving 16-, 18-, 20-, and 24-inch permanent steel piles, the calculated Level A harassment isopleth is larger than the calculated Level B harassment isopleth for low frequency (LF) cetaceans, very high-frequency (VHF) cetaceans, and phocids (tables 9 and 10). This phenomenon also applies to rock hammering in Phase II for LF and VHF cetaceans. Calculation of Level A harassment isopleths include a duration component, which in the case of impact pile driving and rock hammering, is estimated through the total number of daily strikes and the associated pulse duration. For a stationary sound source such as impact pile driving and rock hammering, the calculated distances assume that an animal is exposed to all of the strikes expected within a 24-hour period and, as described above, is therefore likely an

overestimate. Calculation of a Level B harassment isopleth does not include a duration component.

Marine Mammal Occurrence and Take Estimation

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

Below we present available information regarding marine mammal occurrence in the vicinity of the project area and includes site-specific survey information and knowledge from local tribes. Data sources consulted included: (1) anecdotal input and data provided by the Sun'aq Tribe of Kodiak's Natural Resources Director (Van Daele, Personal communication, 2025), (2) Protected Species Observer (PSO) monitoring completed in Near Island Channel on 110 days between November 2015 and June 2016 during the Kodiak Ferry Terminal and Dock Improvements Project, approximately 1.2 km northeast of St. Herman Harbor (ABR Inc., 2016), and (3) density data from the Navy Marine Species Density Database for the U.S Pacific and Gulf of Alaska (Marine Geospatial Ecology Lab, 2021).

Take, by Level A harassment, is predicted to occur for activities wherein the shutdown zones (described below) are smaller than the calculated Level A harassment zones. Take, by Level A harassment, for VHF cetaceans and phocids for both Phase I and Phase II of the SHHIRP were calculated using the following equations:

$$\text{Take by Level A harassment} = (\text{activity's Level A harassment area [km}^2\text{]}) \times \text{estimated density [individuals/km}^2\text{]} \times \text{days of pile installation/removal, DTH drilling, and rock hammering}$$

We note that in their application, the City of Kodiak subtracted the shutdown areas (km²) from Level A harassment areas in their calculations. NMFS does not agree with this approach, as an animal could enter harassment zones before detection, thus could be taken by Level B harassment before shutdowns could be implemented.

Therefore, NMFS applied to full Level A harassment zone calculated from the User Spreadsheet to estimate take.

This formula was applied to all impact pile driving and DTH drilling during Phase I. For Phase II, the formula was applied to all impact pile driving, rock hammering, and the DTH drilling of 24-inch temporary and 20- to 24-inch permanent steel piles. For all other activities (*e.g.*, vibratory removal and driving), Level A harassment does not have the potential to occur based on the analysis. The occurrence data sources used in the Level A harassment calculation above included marine mammal density from source 3 (Marine Geospatial Ecology Lab, 2021). The total calculated amount of Level A harassment proposed for authorization during Phase I and Phase II of the SHHIRP for Dall's porpoise, harbor porpoise, and harbor seals are presented in table 11. The methodologies which have been used to quantify Level A harassment for Steller sea lions are provided in the respective species section below as density data was not a good indicator of the potential for harassment given Steller sea lion use of the project area.

We acknowledge that the number of estimated exposures above higher threshold criteria, *e.g.*, sound exposures exceeding Level A harassment criteria, also encompass the potential for less impactful effects, *e.g.*, Level B harassment. An individual exposure exceeding a Level A harassment criterion may not result in actual auditory injury, yet the individual may have experienced Level B harassment. This outcome is accounted for in our authorization of potential higher-level takes and in our analysis. Specifically, due to this approach for calculating Level A harassment and Level B harassment for VHF cetaceans and phocids, the number of authorized takes by Level A harassment may be applied to observations of Level B harassment. However, the total number of takes may not exceed the sum of the takes authorized by Level A and Level B harassment (table 11).

For species where density data were available and accurately represented the potential for Level B harassment (*i.e.*, fin whale, humpback whale, dolphin, VHF cetaceans, and phocids) and where Level B harassment isopleths are larger than the Level A harassment isopleths, the following equation was used to estimate take:

$$\text{Take by Level B harassment} = (\text{activity level B harassment area [km}^2\text{]} - \text{activity level A harassment area [km}^2\text{]}) \times \text{estimated density [individuals/km}^2\text{]} \times \text{days of pile installation/removal and DTH drilling}$$

where days of pile installation/removal and DTH drilling equate to 32 and 163 (days Level B harassment Isopleths are larger than Level A harassment Isopleths) for Phase I and Phase II, respectively

The methodologies which have been used to quantify Level B harassment for the Steller sea lion, killer whale and other infrequently occurring species (minke whale, Pacific white-sided dolphin, northern elephant seal, and northern fur seal) within the project areas, are detailed in their respective species-specific sub-sections below.

Gray Whale— The City of Kodiak estimated that one gray whale could occur within the Level B harassment zone per month (30 days) during each construction phase because they are considered rare construction area. This is based on small numbers of gray whales observed in Chiniak Bay, approximately 8 km from the project area (Sea Grant Alaska, 2012) NMFS concurs with this frequency-based approach. Given there are 42 estimated days of work for Phase I and 227 estimated days of work for Phase II, the City of Kodiak requested, and NMFS proposes to authorize, two takes by Level B harassment for Phase I and eight takes by Level B harassment for Phase II. Estimated takes by Level B harassment were rounded to the next whole number. Takes by Level A harassment of gray whales are not anticipated and therefore not proposed for authorization.

Fin Whale— Considering fin whales presence near the proposed project areas, they could enter Level B harassment zones daily (32 days for Phase I and 163 for Phase II). Based on a density of 0.068 individuals per square kilometer (km²) (Marine Geospatial Ecology Lab, 2021), the City of Kodiak requested 16 takes by Level B harassment for Phase I and 68 takes by Level B harassment for Phase II) based on their calculations. However, NMFS revised the vibratory source levels for 16-inch and 18-inch steel piles to reflect the best available science. This revision expanded the Phase II Level B harassment isopleth, increasing the takes by Level B harassment from 68 to 75 whales. Accordingly, NMFS proposes to authorize 16 takes by Level B harassment for Phase I and 75 for Phase II. Takes by Level A harassment for fin whales are not anticipated and therefore not proposed for authorization.

Humpback Whale— Considering humpback whales' presence near the proposed project areas, they could enter Level B harassment zones daily (32 days for Phase I and 163 for Phase II). Humpback whales are expected to occur at a density of 0.093 individuals per km² (Marine Geospatial Ecology Lab, 2021). However, upon review of the application, NMFS adjusted the Level B harassment take estimates for humpback whales to account for revised vibratory source levels for 16- to 18-inch steel piles, which expanded the Level B harassment isopleth for Phase II. Consequently, the calculated take estimate for Phase II increased from 93 to 103 humpback whale. Therefore, NMFS proposes to authorize 22 and 103 takes by Level B harassment for Phase I and II, respectively.

In the SHHIRP areas, it is estimated that the majority of whales (89 percent) will be from the Hawaii DPS, 11 percent will be from the Mexico-North Pacific DPS, and 1 percent will be from the endangered Western North Pacific DPS (Wade, 2021; Muto *et al.*, 2022). Therefore, for Phase I, 19 takes are assumed to be from the Hawaii DPS, 2 takes from the Mexico-North Pacific DPS, and 1 take from the Western North Pacific

DPS. For Phase II, 91 are assumed to be from the Hawaii DPS, 11 takes from the Mexico-North Pacific DPS, and 1 Western North Pacific DPS. Takes by Level A harassment for humpback whales are not anticipated and therefore not proposed for authorization.

Minke Whale—Minke whales are often sighted individually and are considered rare within the project area. The City of Kodiak estimated that one group of one minke whale could occur within the Level B harassment zone per month (30 days) during each construction phase. NMFS concurs with this frequency-based approach and proposes to authorize two takes by Level B harassment for Phase I (42 days) and eight takes by Level B harassment for Phase II (227 days). Estimated takes by Level B harassment was rounded to the next whole number. Takes by Level A harassment for minke whales are not anticipated and therefore not proposed for authorization.

Killer Whale— Based on previous sightings at the Kodiak Ferry Terminal of groups of three to seven animals (ABR, 2016), the City of Kodiak estimated one group of six animals could occur every 10 days. NMFS concurs with this approach and proposes to authorize 26 takes by Level B harassment for Phase I (42 days) and 137 takes by Level B harassment for Phase II (227 days). In the action area it is estimated that the majority of killer whales (80 percent) will be from the Alaska resident stock and 20 percent will be from the Gulf of Alaska/Aleutian Islands/Bering Sea transient stock (Muto *et al.*, 2022). Therefore, for Phase I, 20 takes are assumed to be from the Alaska resident stock and 6 takes from the Gulf of Alaska/Aleutian Islands/Bering Sea transient stock. For Phase II, 105 takes are assumed to be from the Alaska resident stock and 32 takes from the Gulf of Alaska/Aleutian Islands/Bering Sea transient stock. Takes by Level A harassment for killer whales are not anticipated and therefore not proposed for authorization.

Pacific White-sided Dolphin—Pacific white-sided dolphin group sizes are usually between 10 and 100 animals. This species is rare in shallow, enclosed waters like the

construction areas in St. Herman Harbor. However, to account for the potential for Pacific white-sided dolphins to enter construction areas, the City of Kodiak estimated that 1 group of 10 animals could enter Level B harassment zones during Phase I construction, and 2 groups of 10 animals could enter Level B harassment zones during Phase II construction. NMFS concurs with this approach and proposes to authorize take by Level B harassment of 10 Pacific white-sided dolphins for Phase I and 20 for Phase II. Takes by Level A harassment of Pacific white-sided dolphins are not anticipated and therefore not proposed for authorization.

Dall's Porpoise—Dall's porpoises are year-round residents of the waters surrounding Kodiak Island and are frequently observed near the proposed project area. Therefore, Dall's porpoises are anticipated to occur in the project areas during construction activities. In the proposed project areas, Dall's porpoises are expected to occur at a density of 0.218 individuals per km² (Marine Geospatial Ecology Lab, 2021). Using the Level B harassment equation above, the City of Kodiak requested 45 and 213 takes by Level B harassment for Phase I and Phase II, respectively. However, upon review of the application, NMFS adjusted the Level B harassment take estimates for Dall's porpoises to account for revised vibratory source levels for 16- to 18-inch steel piles, which expanded the Level B harassment isopleth for Phase II. Consequently, the calculated take estimate for Phase II increased from 213 to 236 Dall's porpoise. Based on this revision, NMFS proposes to authorize 45 takes for Phase I and 236 takes for Phase II by Level B harassment.

Construction activities for both phases include impact pile driving and DTH drilling, with rock hammering occurring exclusively during Phase II. During each of these activities, Level A harassment isopleths are larger than Level B harassment isopleths. The City of Kodiak used the expected density of 0.218 individuals per km² with the equation provided in their application and requested 15 takes by Level A

harassment for Phase I and 21 for Phase II. However, the equation in their application subtracts the proposed shutdown zone areas from the Level A harassment zone areas. To account for potential undetected entry of animals into shutdown zones, NMFS modified the City of Kodiak's Level A harassment equation (provided above) and did not deduct the shutdown zone area from the Level A harassment area. Therefore, NMFS proposes to authorize 17 takes during Phase I and 28 takes during Phase II for Dall's porpoise by Level A harassment.

Harbor Porpoise—Harbor porpoises are present in Kodiak year-round and are frequently observed near the proposed action areas. Therefore, harbor porpoises are anticipated to occur in the project areas during construction activities. In the proposed project areas, harbor porpoises are expected to occur at a density of 0.0473 individuals per km² (Marine Geospatial Ecology Lab, 2021). Using the Level B harassment equation above, the City of Kodiak requested 10 and 47 takes by Level B harassment for Phase I and Phase II, respectively. However, upon review of the application, NMFS adjusted the Level B harassment take estimates for harbor porpoises to account for revised vibratory source levels for 16- to 18-inch steel piles, which expanded the Level B harassment isopleth for Phase II. Consequently, the calculated take estimate for Phase II increased from 47 to 52 harbor porpoises. Based on this revision, NMFS proposes to authorize 10 takes for Phase I and 52 takes for Phase II by Level B harassment.

Using the Level A harassment methodology and density estimates described above, NMFS proposed to authorize 4 and 7 takes by Level A harassment of harbor porpoise during Phase I and Phase II, respectively.

Steller Sea Lions—Steller sea lions are considered common in the project areas and are expected to occur in the project areas daily. The Sun'aq Tribe of Kodiak conducted single day counts of Steller sea lions hauled out at the Dog Bay Float once per month during March, May, June, and September 2023; January, April, May, and October

2024; and March, May, July, and September 2025 (Van Daele, pers. communication, 2025). Across 12 single-day counts conducted by the Sun'aq Tribe of Kodiak, Steller sea lion abundance at the Dog Bay Float averaged 125 individuals, ranging from a minimum of 0 (June 2023 and July 2025) to a maximum of 226 (May 2025). Based on these data and in consideration that the specified activities could occur throughout the year during times when Steller sea lion presence is low, the City of Kodiak estimated that 125 individuals could enter Level B harassment zones daily during Phase I construction and 75 individuals could enter Level B harassment zones daily during Phase II construction. The difference between these daily estimates was proposed by the applicant because of the different distances from construction areas to the Dog Bay Float. However, NMFS assumes animals are expected to pass through Phase I and Phase II harassment zones at the same frequency as they transit to and from the Dog Bay Float. Therefore, NMFS expects that 125 Stellar sea lions could enter Level B harassment zones during each day (42 days for Phase I and 227 days for Phase II) of construction and proposes to authorize 5,250 takes by Level B harassment for Phase I and 25,875 for Phase II.

Throughout these sea lion counts, observers documented multiple Steller sea lions with identifiable marking (*e.g.*, branded animals) or scars each time. Recurring observations of the same individuals with distinct identifiable markings indicates that the Stellar sea lions that regularly haulout on the Dog Bay Float consists of a semi-closed population of approximately 300 animals (Van Daele, Personal communication, 2025).

NMFS considered this information when determining the amount of Level A harassment that may occur. Based on the calculation methodology provided above, the instances of Level A harassment are likely a gross overestimate of take as the same individuals are likely to remain in the project area, increasing the risk of incurring AUD INJ. While NMFS recognizes some individuals may leave and others may move in, a more appropriate and representative potential for Level A harassment can be derived by

the number of individuals occurring in the action area. As described above, there are likely approximately 300 Steller sea lions that use the Dog Bay Float based on sighting data. Assuming all 300 accrue enough sound energy to elicit AUD INJ, the City of Kodiak requests (300 takes, by Level A harassment, for Phase I and 300 takes, by Level A harassment, for Phase II). While some animals may reoccur between Phase I and Phase II, there may be sufficient time between phases where new animals move in. Therefore, we are conservatively proposing to authorize the same amount of AUD INJ (300 takes) in both IHAs.

This approach is further justified in consideration of the type of impact that may occur. As described in the **Potential Effects of Specified Activities on Marine Mammals and Their Habitat** section, AUD INJ is a permanent injury, however, animals may experience partial or incomplete recovery above baseline hearing levels.

Northern Elephant Seal—Northern elephant seals are considered rare within the project area. However, a recent observation of a hauled-out northern elephant seal by the Sun’aq tribe of Kodiak indicates that the species has the potential to be in the project area during construction (Van Daele, Personal communication, 2025). The city of Kodiak estimated that one northern elephant seal could enter the Level B harassment zone every month (30 days) during each phase of the proposed construction activities. NMFS concurs with this frequency-based approach and proposes to authorize two takes by Level B harassment for Phase I (42 days) and eight takes by Level B harassment for Phase II (227 days). Estimated takes by Level B harassment was rounded to the next whole number. Takes by Level A harassment of northern elephant seals are not anticipated and therefore not proposed for authorization.

Northern Fur Seal—Northern fur seals are considered rare within the project area. Although rare, it is possible that northern fur seals would enter project areas during construction activities. The City of Kodiak estimated that one northern fur seal could

enter the Level B harassment zone every month (30 days) during each phase of the proposed construction activities. NMFS concurs with this approach and proposes to authorize two takes by Level B harassment for Phase I (42 days) and eight takes by Level B harassment for Phase II (227 days). Estimated takes by Level B harassment were rounded to the next whole number. Takes by Level A harassment of northern fur seals are not anticipated and therefore not proposed for authorization.

Harbor Seal—Harbor seals are present in Kodiak year-round and are frequently observed near the proposed action areas. Therefore, harbor seals are anticipated to occur in the project areas during construction activities. The City of Kodiak used the expected density of 0.1689 individuals per square kilometer area (Marine Geospatial Ecology Lab, 2021). Using the Level B harassment equation above, the City of Kodiak requested 37 and 170 takes by Level B harassment of harbor seals during Phase I and Phase II, respectively. However, upon review of the application, NMFS adjusted the Level B harassment take estimates for harbor seals to account for revised vibratory source levels for 16- to 18-inch steel piles, which expanded the Level B harassment isopleth for Phase II. Consequently, the calculated exposure estimate for Phase II increased from 170 to 187 harbor seals. Therefore, NMFS proposes to authorize 37 takes for Phase I and 187 takes for Phase II by Level B harassment.

Using the Level A harassment methodology and density estimates described above, NMFS proposed to authorize 6 and 13 takes by Level A harassment of harbor seal during Phase I and Phase II, respectively.

Table 11 -- Proposed Take of Marine Mammals by Level A and Level B harassment and Percent of Each Stock Expected to be Take for Phase I and Phase II of the SHHIRP

Species	Stock	Proposed take-Phase I		Proposed take- Phase II		Take as percentage of stock abundance	
		Level A harassment	Level B harassment	Level A Harassment	Level B Harassment	Phase I	Phase II
Gray Whale	Eastern North Pacific	0	2	0	8	<1	<1

Fin Whale	Northeast Pacific	0	16	0	75	*	*
Humpback Whale	Hawai'i	0	19	0	91	<1	<1
	Mexico-N Pacific	0	2	0	11	*	*
	Western N Pacific	0	1	0	1	<1	<1
Minke Whale	Alaska	0	2	0	8	*	*
Killer Whale	Eastern North Pacific-Alaska Resident	0	20	0	105	1	5.5
	Eastern North Pacific-Gulf of Alaska, Aleutian Islands, and Bering Sea Transient	0	6	0	32	1	5.5
Pacific White-sided Dolphins	North Pacific	0	10	0	20	<1	<1
Dall's Porpoise	Alaska	17	45	28	236	*	*
Harbor Porpoise	Gulf of Alaska	4	10	7	52	<1	<1
Steller Sea Lion	Western	300	5,250	300	25,875	11	52.5
Northern Fur Seal	Eastern Pacific	0	2	0	8	<1	<1
Harbor Seal	South Kodiak	6	37	13	187	<1	<1
Northern Elephant Seal	CA Breeding	0	2	0	8	<1	<1

*a reliable abundance estimate is not available for this stock

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other

means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

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

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

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

The mitigation requirements described in the following were proposed by City of Kodiak in its adequate and complete application or are the result of subsequent coordination between NMFS and the City of Kodiak. City of Kodiak has agreed that all of the mitigation measures are practicable. NMFS has fully reviewed the specified activities and the mitigation measures to determine if the mitigation measures would result in the least practicable adverse impact on marine mammals and their habitat, as required by the MMPA, and has determined the proposed measures are appropriate. NMFS describes these below as proposed mitigation requirements and has included them in the proposed IHAs. These measures must be adhered to unless in the case of human safety concerns or pile refusal/instability.

Pre- and Post-Activity Monitoring

Prior to the start of daily in-water construction activities, or whenever a break in pile driving of 30 minutes or longer occurs, PSOs would observe for marine mammals at least 30 minutes (pre-clearance monitoring) through 30 minutes post-completion of pile removal/driving, DTH drilling, or hydraulic rock hammering activities. Pre-clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in tables 12 and 13 are clear of marine mammals.

Soft-Start Procedures for Impact Driving

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. The City of Kodiak 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. Soft start is not applicable to other in-water construction activities.

Clearance and Shutdown Zones

For all pile driving and removal activities, DTH drilling, and hydraulic rock hammering, the city of Kodiak proposes to implement clearance and shutdowns. The purpose of a clearance and shutdown is to reduce the probability or scope of proximal acute impacts by taking steps in real time (i.e., delay commencement of or stopping an activity) once a higher-risk scenario is identified. Clearance and shutdown zones vary based on the activity type and marine mammal hearing group (tables 12 and 13) but are essentially equal with respect to size. In most cases, these zones are based on the estimated Level A harassment isopleth distances for each hearing group and rounded up.

The City of Kodiak would implement clearance and shutdown zones that exceed the calculated Level A harassment zones during the vibratory installation and removal of all piles during both phases of construction. During impact driving, DTH drilling, and rock hammering (the latter of which applies to Phase II exclusively), the City of Kodiak would implement clearance and shutdown zones with a maximum size of 400 m for porpoise and harbor seals due to difficulty in observing these species at greater distances. For Steller sea lions, the city of Kodiak would implement clearance and shutdown zones with a maximum size of 50 m for these activities. Given the persistent occurrence of Steller sea lions in the project area, establishing mitigation zones beyond 50 m would be impracticable and lead to delays in the project which could have negative consequences in that the project would be extended over time. For all other marine mammal species, proposed clearance and shutdown zones would exceed the calculated Level A harassment zones.

Construction supervisors and crews, PSOs, and relevant City of Kodiak staff must avoid direct physical interaction with marine mammals during construction activities. If marine mammals come within 10 m of such activity, operations must cease, to avoid direct interaction. 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 clearance and shutdown zone indicated in tables 12 and 13, or 15 minutes have passed without re-detection of the animal.

Finally, 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 any clearance and shutdown zone. If a marine mammal species not covered under these IHAs enters a clearance and shutdown zone, all in-water activities will cease until the animal

leaves the zone or has not been observed for at least 15 minutes. Pile driving will proceed if the unauthorized species is observed leaving the clearance and shutdown zone or if 15 minutes have passed since the last observation.

Table 12 -- Proposed Clearance and Shutdown Zones (m): Phase I

Pile size and material	Clearance and Shutdown Zones (m)					Level B Harassment Zones (m)
	Low Frequency Cetaceans	High Frequency Cetaceans	Very High Frequency Cetaceans	Phocids	Otariids	
Vibratory pile driving						
24-inch steel piles ^a	20	10	20	30	10	7,360
30-inch steel piles	35	15	30	45	15	11,660
Impact pile driving						
24-inch steel piles ^b	590	75	400	400	50	1,000
24-inch steel piles	1,940 ^c	250	400 ^c	400 ^c	50	1,000
30-inch steel	1,940 ^c	250	400 ^c	400 ^c	50	1,000
DTH pile drilling						
24-inch steel ^b	1,430	185	400	400	50	12,000
24-inch steel	1,660	215	400	400	50	12,000
30-inch steel	3,575	460	400	400	50	12,000

^a Indicates both temporary and permanent piles

^b Indicates temporary piles only

^c The Level A harassment zone is the largest zone for these hearing groups for these activities and therefore represents the largest monitoring zone.

Table 13 -- Proposed Shutdown Zones (m) and Monitoring Zones: Phase II

Pile size and material	Shutdown Zones (m)					Level B Harassment Zones (m)
	Low Frequency Cetaceans	High Frequency Cetaceans	Very High Frequency Cetaceans	Phocids	Otariids	
Vibratory pile driving						
12- to 20-inch piles ^a	30	15	25	40	15	7,360
16- or 18-inch steel piles	20	10	20	30	10	7,360

20- or 24-inch steel piles	20	10	20	30	10	7,360
Impact pile driving						
16- or 18-inch steel piles	1,425 ^c	185	400 ^c	400	50 ^c	465
24-inch steel piles ^b	590	75	400	400	50	1,000
20- or 24-inch steel	1,940 ^c	250	400 ^c	400	50	1,000
DTH pile driving						
16- or 18-inch steel	230	30	350	205	50	12,000
24-inch steel piles ^b	1,430	185	400	400	50	12,000
20- or 24-inch steel	1,660	215	400	400	50	12,000
Hydraulic hammering/ rock fracturing						
Rock hammering	610 ^c	80	400 ^c	400	50	545

^a Indicate existing piles for removal only

^b Indicate temporary piles only

^c The Level A harassment zone is the largest zone for these hearing groups for these activities and therefore represents the largest monitoring zone.

Protected Species Observers (PSOs)

The number and placement of PSOs during all construction activities (described in the **Proposed Monitoring and Reporting** section) would be designed to ensure that the entire shutdown zone is visible. The City of Kodiak would employ a minimum of three PSOs and all three PSOs would be on duty during all pile driving, pile removal, and DTH drilling activities for Phase I and Phase II of the SHHIRP.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined for each proposed IHA 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, and on the availability of such species or stock for subsistence uses.

Proposed Monitoring and Reporting

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

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;

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

The monitoring and reporting requirements described in the following were proposed by the City of Kodiak in its adequate and complete application. The City of Kodiak has agreed that all of the mitigation measures are appropriate. NMFS describes these below as proposed requirements and has included them in the proposed IHA's.

All PSOs must be NMFS-approved and have no other assigned tasks during monitoring periods. At least one PSO would have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued ITA.

During all in-water work for Phase I and Phase II of the SHHIRP, PSOs would monitor from various stations around the project sites (See figure 16 in the City of Kodiak's Protected Species Monitoring and Mitigation Plan for station locations). PSOs would monitor the Level A harassment and Level B harassment zones to the extent practicable document the marine mammal's presence and behavior. During Phase I in-water construction, a minimum of three PSOs will monitor for marine mammals 30-minutes before, during, and 30 minutes after the specified activities from stations 1, 2, and 3. figure 16 in the City of Kodiak's Protected Species Monitoring and Mitigation Plan. During Phase II, a minimum of three PSOs would monitor for marine mammals during pile driving activities from stations 1, 3, and 4 while a minimum of two PSOs would monitoring during rock hammering and dredging activities from stations 3 and 4.

Monitoring would be conducted 30 minutes before, during, and 30 minutes after the specified activities. Prior to the start of daily activities listed in table 12 and table 13 and again following the conclusion of these activities each day, PSOs shall conduct a systematic census of Steller sea lions within the harbor. PSOs will record the total number of individuals observed hauled out on the float and those present in the water. To

the maximum extent possible, PSOs shall document and record the identity of any individually identifiable Steller sea lions (*e.g.*, those with brands, scars, or unique markings). Additionally, observers 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.

The City of Kodiak would abide by all monitoring and reporting measures contained within the IHAs, if issued, and their Protected Species Monitoring and Mitigation Plans (see NMFS' website at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>). NMFS describes these below as requirements and has included them in the proposed IHA.

Reporting

The City of Kodiak would be required to submit a draft report(s) on all construction activities and marine mammal monitoring results to NMFS within 90 days of the completion of monitoring, or 60 days prior to the requested issuance of any subsequent IHAs or similar activity at the same location, whichever comes first. The information required to be collected and reported to NMFS is included in the draft IHA available at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>. In summary, the report would include, but not be limited to, information regarding activities that occurred, marine mammal sighting data, and whether mitigative actions were taken or could not be taken. The City of Kodiak would also be required to submit reports on any observed injured or dead marine mammals. If the death or injury was clearly caused by the specified activity, the City of Kodiak would immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures

are appropriate to ensure compliance with the terms of the IHA. The City of Kodiak would not resume its activities until notified by NMFS.

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

Negligible Impact Analysis and Determination

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

To avoid repetition, the majority of our analysis applies to all the species listed in table 3, given that many of the anticipated effects of this project on different marine

mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

NMFS has identified key factors which may be employed to assess the level of analysis necessary to conclude whether potential impacts associated with a specified activity should be considered negligible. These include (but are not limited to) the type and magnitude of taking, the amount and importance of the available habitat for the species or stock that is affected, the duration of the anticipated effect to the species or stock, and the status of the species or stock. The following factors support negligible impact determinations for all affected stocks.

Pile driving, pile removal, DTH drilling, and rock hammering activities associated with both phases of the SHHIRP, 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 impact pile driving, DTH drilling, and hydraulic rock hammering. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

For Phase I and Phase II of the SHHIRP, take by Level A harassment is proposed to be authorized for four species (Dall's porpoise, harbor porpoise, harbor seal, and Steller sea lion) to account for the possibility that an animal could be in a Level A harassment zone prior to detection, and remain within that zone for a duration long enough to incur AUD INJ. Any take by Level A harassment is expected to arise from, at most, a small degree of AUD INJ, *i.e.*, minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by impact pile driving, DTH

drilling, and rock hammering (*i.e.*, the low-frequency region below 2 kilohertz (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 AUD INJ. If hearing impairment occurs, it is most likely that the affected animal would lose only a few dB in its hearing sensitivity. Due to the small degree anticipated, any AUD INJ from Level A harassment potentially incurred is not expected to impair an individual's ability to communicate, forage, or detect predators to a level that would impact reproductive success or survival, much less result in adverse impacts on the species or stock.

Further, in both Phase I and Phase II, the quantity of take by Level A harassment proposed for authorization is very low. For eight species, NMFS anticipates no take by Level A harassment over the duration of the City of Kodiaks planned activities (both phases). For Phase I, NMFS expects 17 takes of Dall's porpoise by Level A harassment and 28 in phase II; 4 takes by Level A harassment for harbor porpoise in Phase I and 7 in Phase II; and 6 takes by Level A harassment for harbor seal in Phase I and 13 in Phase II. The quantity of Level A take proposed for authorization for Steller sea lions is 300 individuals for Phase I and 300 for Phase II due to the close proximity of the Dog Bay Float to the proposed construction areas and persistence of individuals at the float.

As described above, NMFS expects that marine mammals would likely move away from an aversive stimulus, especially at levels that would be expected to result in AUD INJ, given sufficient notice through use of soft start. The City of Kodiak would also be required to shut down pile driving activities if marine mammals approach within hearing group-specific zones (see tables 12 and 13), further minimizing the likelihood and degree of AUD INJ and more severe behavioral responses. Even absent mitigation, no serious injury or mortality from construction activities is anticipated or proposed to be

authorized.

Effects on individuals that are taken by Level B harassment in the form of behavioral disruption, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as avoidance, increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff 2006). Most likely, individuals would simply move away from the sound source and temporarily avoid the area where pile driving is occurring. If sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activities are occurring, particularly as the project is located in a busy harbor with high amounts of commercial and recreational vessel traffic. We expect that any avoidance of the project area by marine mammals would be temporary in nature and that any marine mammals that avoid the project area during construction would not be permanently displaced. Steller sea lions may remain on the float for longer duration or swim with their heads out of the water more often. Short-term avoidance of the project area and energetic impacts of interrupted foraging or other important behaviors is unlikely to affect the reproduction or survival of individual marine mammals, and the effects of behavioral disturbance on individuals is not likely to accrue in a manner that would affect the rates of recruitment or survival of any affected stock.

Additionally, and as noted previously, 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.

This project is also not expected to have significant adverse effects on affected marine mammals' habitats. The project activities will not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected (with no known particular importance to marine mammals), the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

Steller sea lions are common in the project area, frequently using the Dog Bay Float, a man-made structure frequently as a haulout. The Dog Bay Float is located in close proximity to the project area and is 200 m from Phase I and 300 m from Phase II. Multi-year monitoring by the Sun'aq Tribe of Kodiak indicates high seasonal variability in use, with counts ranging from zero individuals during summer months (June 2023, July 2025) to a peak of 286 individuals in May 2025. Anecdotal data from these counts indicate that Steller sea lions exhibit strong site fidelity, meaning that the same individuals are likely to remain in the area over time, transiting around the project area to and from the float. Steller sea lions that exhibit strong site fidelity consists of a core group of approximately 300 animals (Van Daele, pers. comm., 2025).

While the total number of takes proposed for authorization represents a notable proportion of the Western DPS of Steller sea lions, the majority of these exposures are expected to occur to this core group of 300 animals. Consequently, the requested take does not represent a broad impact across the entire stock, but rather repeated exposures of the same individuals. Although this core group of Steller sea lions may experience frequent or long-term exposure to elevated underwater sound levels, such intermittent disturbances are not expected to result in chronic stress or physical injury that would reduce the fitness, survival, or reproductive success of any individual. Because the

anticipated impacts are localized to a small subset of the population and are not expected to affect the health of those individuals, the proposed authorized take will not reach a level of biological significance that would affect annual rates of recruitment or survival for the Western DPS of Steller sea lions.

While the project is geographically situated within designated critical habitat for the Western DPS of Steller sea lions, the resulting ensonified areas overlap with only a negligible proportion of the overall designated habitat. As previously described, the best available information suggests this specific area is utilized primarily by a core group of approximately 300 individuals (Van Daele, pers. comm., 2025). The proposed activities are expected to result only in short-term, temporary avoidance of the immediate vicinity of the project area during active construction.

Ample high-quality habitat remains available in adjacent areas around Kodiak Island to support individuals that may be temporarily displaced. Because the acoustic stressors are intermittent and the physical footprint of the project is localized, the impacts to the essential features of the critical habitat will be limited both spatially and temporally. Consequently, the proposed action is not expected to diminish the value or functional role of the critical habitat for the Western DPS of Steller sea lions, and the overall effects on the designated critical habitat are expected to be de minimis.

The waters off of Kodiak Island have also been identified as BIAs for fin whale, humpback whale, and gray whale, the ensonified areas from each phase of proposed construction activities would only overlap with a minimal part of these identified areas. Additionally, the shallow waters temporarily affected by the proposed construction activities do not represent typical habitat for these species and occurrence of these species is low in the project area.

Combined with the low expected occurrence, it is unlikely that minor noise effected in a small, localized area of habitat would have any effect on the reproduction

and survival of any individuals, much less these stocks' annual rates of recruitment or survival. Due to a combination of these factors and evidence from monitoring reports from other similar activities in the area, we believe the potential effects of the specified activities would only have 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;
- No take by Level A harassment is proposed to be authorized for 8 of 12 species;
- The ensonified areas, and St. Herman Harbor in general, are very small relative to the overall habitat ranges of all species and stocks, and overlap with known areas of important habitat is minimal;
- The number of takes by Level A harassment is limited and of a low severity;
- The number of 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, vibratory pile driving, DTH drilling, and hydraulic rock hammering 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 on their populations;

- Nearby areas of similar habitat value around Kodiak Island are available for marine mammals that may temporarily vacate the project areas during construction activities for both phases of the proposed project;
- 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 from either phase of the project;
- The lack of anticipated significant or long-term negative effects to marine mammal habitat.

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 for each proposed IHA that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under 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

(see 86 FR 5322, January 19, 2021). Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

For all species other than Steller sea lions, the proposed take for each IHA is below one-third of the overall stock abundance. The number of instances of take of Steller sea lions is greater than one-third of the stock abundance; however, the best available science indicates that a much smaller number of individuals would be taken repeatedly. Construction activities associated with this project will occur in close proximity (200 to 300 meters) to the Dog Bay Float, which is regularly used by Steller sea lions as a haulout. Local, anecdotal data indicates that Steller sea lions exhibit strong site fidelity, meaning that the same individuals are likely to remain in the area over time, transiting around the project area to and from the float. Additionally, the project area represents a small geographic area relative to the stock's overall range in the Gulf of Alaska (Jemison *et al.*, 2018). Therefore, only a small proportion of the total stock is expected to be taken under each IHA by the specified activities with the number of Steller sea lions exposed repeatedly over multiple days.

There are no official abundance estimates available for humpback whales (Mexico-North Pacific stock), fin whales (Northeast Pacific stock), minke whales (Alaska stock), and Dall's porpoises (Alaska stock).

While the most recent abundance estimate for the Mexico-North Pacific stock of humpback whale is likely unreliable due to its age (exceeding 8 years), two older minimum population estimates exist: 2,241 (Martínez-Aguilar, 2011) and 766 (Wade, 2021). Even using the conservative minimum population estimate, the proposed takes by Level B harassment (2 for Phase I and 11 for Phase II) represent less than 2 percent of the estimated abundance. This holds true even if each take involves a unique individual.

For the Northeast Pacific stock of fin whale, Young *et al.* (2024) estimate a minimum size of 2,554 individuals within surveyed areas. Consequently, the takes

proposed for authorization by Level B harassment (16 for Phase I and 75 for Phase II) constitute small numbers relative to the stock size (< 3 percent).

Although no current abundance estimate for the Alaska stock of minke whale is available, Young *et al.* (2024) recently documented over 2,000 individuals within surveyed areas. Based on this, the proposed takes by Level B harassment (two for Phase I and eight for Phase II) represent a small portion of the stock for each IHA, assuming each take affects a new individual.

Finally, the most recent abundance estimate for the Alaska stock of Dall's porpoise was 83,400 animals. While this data is more than 8 years old, no evidence suggests a drastic decline since that time. Therefore, the takes proposed by Level A harassment and Level B harassment across both Phase I (17 Level A harassment; 45 Level B harassment) and Phase II (28 Level A harassment; 236 Level B harassment) represent a small fraction of the total stock for each IHA

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 for each proposed IHA 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.

Given the nature of the activity and the required mitigation measures, serious injury and mortality are not expected to occur. Any impacts on marine mammals in the project area would be limited to temporary behavioral disturbances and potential AUD-INJ. As described above, the required mitigation and monitoring measures are expected to reduce the frequency and severity of takes of marine mammals.

The closest community to the proposed construction sites is the city of Kodiak, AK. In 2021, the most recent year in which data is available, approximately 1.6 percent of households in the city of Kodiak attempted harvest of marine mammals, with harvest of only harbor seals and sea otters reported (ADF&G, 2021). Through discussions between the City of Kodiak and representatives of the Sun'aq tribe, it was determined that harvest of marine mammals only occurs outside of the St. Herman Harbor (Van Daele, Personal communication, 2025). The proposed activities would occur within the St. Herman Harbor where subsistence hunting does not occur. The SHHIRP would occur outside of traditional subsistence hunting areas and construction is only expected to result in marine mammals temporarily avoiding the project area while construction is underway. The City of Kodiak also frequently engages with Sun'aq tribal representatives and corresponded with these representatives directly for SHHIRP. Through the City of Kodiak's multiple engagements with Sun'aq tribal representatives for the SHIRRP, tribal representatives have never expressed concern that the proposed project would affect the availability of harbor seals or sea otters for subsistence. Based information described above, no relevant subsistence uses of marine mammals are expected to be adversely impacted by these actions. Both phases of the SHHIRP are not likely to adversely impact

the availability of any marine mammal species or stocks that are commonly used for subsistence purposes or impact subsistence harvest of marine mammals in the region.

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 for each proposed IHA that there will not be an unmitigable adverse impact on subsistence uses from the City of Kodiak's proposed activities.

Endangered Species Act

Section 7(a)(2) of the ESA of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency ensures that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with Alaska Regional Office (AKRO).

NMFS Office of Protected Resources (OPR) is proposing to authorize take of humpback whales (Mexico-North Pacific and Western North Pacific), fin whales (Northeast Pacific), and Steller sea lions (Western DPS), which are listed under the ESA. OPR has requested initiation of section 7 consultation with the AKRO for the issuance of these IHAs. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue two consecutive IHAs to the City of Kodiak for the SHHIRP in St. Herman Harbor, Kodiak, Alaska provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. Drafts 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. We also request comment on the potential renewal 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 a subsequent renewal IHAs.

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

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

- The request for renewal must include the following:

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

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

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

Dated: March 10, 2026.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2026-04885 Filed: 3/12/2026 8:45 am; Publication Date: 3/13/2026]