DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD572]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Port of Alaska's North Extension Stabilization Step 1 Project in Anchorage, Alaska

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Port of Alaska (POA) to incidentally harass marine mammals during construction activities associated with the North Extension Stabilization Step 1 (NES1) Project in Anchorage, Alaska.

DATES: This authorization is effective from April 1, 2024, through March 31, 2025.

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

FOR FURTHER INFORMATION CONTACT: Reny Tyson Moore, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

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

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as ''mitigation''); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On July 19, 2022, NMFS received a request from the POA for an IHA to take marine mammals incidental to construction activities related to the NES1 project in Anchorage, Alaska. Following NMFS' review of the application, the POA submitted revised versions on December 27, 2022, July 28, 2023, and August 31, 2023. The application was deemed adequate and complete on September 7, 2023. The POA submitted a final version addressing additional minor corrections on September 21, 2023. The **Federal Register** notice of the proposed IHA and request for comments was published on November 6, 2023 (88 FR 76576). The POA's request is for take of seven species of marine mammals by Level B harassment and, for a subset of these species (*i.e.,* harbor seal (*Phoca vitulina*) and harbor porpoise (*Phocoena phocoena*)), Level A harassment. Neither the POA nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued IHAs to the POA for similar work (85 FR 19294, April 6, 2020; 86 FR 50057, September 7, 2021). The POA complied with all the requirements (*e.g.,* mitigation, monitoring, and reporting) of the previous IHAs, and information regarding their monitoring results may be found in the Effects of the Specified Activity on Marine Mammals and their Habitat section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), the Estimated Take section in this notice of issuance, and online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

This IHA will cover 1-year of the ongoing Port of Alaska Modernization Program (PAMP) for which the POA obtained prior IHAs and intends to request additional take authorization for subsequent facets of the program. The PAMP involves construction activities related to the modernization of the POA's marine terminals.

Description of Specified Activity

The POA, located on Knik Arm in upper Cook Inlet, provides critical infrastructure for the citizens of Anchorage and a majority of the citizens of Alaska. The North Extension at the POA is a failed bulkhead structure that was constructed between 2005 and 2011. Parts of the North Extension bulkhead structure and the surrounding upland area are unstable and collapsing, and some of the sheet piles are visibly twisted and buckled. The structure presents safety hazards and logistical impediments to ongoing Port operations, and much of the upland area is currently unusable. The North Extension Stabilization (NES) project will result in removal of the failed sheet pile structure and reconfiguration and realignment of the shoreline within the North Extension, including the conversion of approximately 0.05 square kilometers (km^2; 13 acres) of developed land back to intertidal and subtidal habitat within Knik Arm. The NES project will be completed in two distinct steps, NES1 and NES2, separated by multiple years and separate permitting efforts. This notice is applicable to an IHA for the incidental take of marine mammals during in-water construction associated with NES1.

The NES1 project will involve the removal of portions of the failed sheet pile structure to stabilize the North Extension. The NES1 project will remove approximately half of the North Extension structure extending approximately 274-meters (m) north from the southern end of the North Extension. This project will also stabilize the remaining portion of the North Extension by creating an end-state embankment. While the majority of the Project will be demolition work, the term ''construction'' as used herein refers to both construction and demolition work.

In-water construction associated with this project includes vibratory installation and removal of 81 24-inch (61-centimeter (cm)) or 36-inch (91-cm) temporary steel pipe stability template piles as well as vibratory removal, splitting (via a sheet pile splitter used in

conjunction with a vibratory hammer), pile cutting (via hydraulic shears or underwater ultrathermic cutting) and possible impact removal of approximately 4,216 sheet piles from the structure tailwalls, cell faces (bulkhead), and closure walls. Demolition of the failed sheet pile structure will be accomplished through excavation and dredging of impounded soils (fill material), and cutting and removal of the existing sheet piles, most likely through use of a pile splitter and vibratory hammer. It is assumed that pile splitting will produce the same or similar sound levels to a vibratory hammer used without the splitter attachment. Therefore, the use of a vibratory hammer to remove sheet piles and the use of a splitter is combined into a single category (*i.e.,* vibratory hammer removal) and treated the same in our analysis.

The first attempt to extract the sheet piles will be with direct vertical pulling or with a vibratory hammer; however, there may be complications with the sheet pile interlocks, which could become seized, and other means of pile removal may be required (*i.e.,* impact removal, shearing, or torching). In addition, to minimize potential impacts on marine mammals from in-water sheet pile removal, removal in the dry would be maximized as feasible. The demolition plan also includes stabilization of the face sheets through installation of temporary piles and dredging back into the cell to relieve pressure on the sheet piles and to eliminate any release of material into Cook Inlet beyond natural tidal forces. It is anticipated that 3 sets of 27 temporary piles would be required for a total of 81 installations and 81 removals (table 1). Temporary piles would be installed and removed with a vibratory hammer. Sound produced by vibratory pile installation and removal and impact pile removal may result in the take of marine mammals, by harassment only. Sound produced by all other NES1 project activities (*e.g.,* hydraulic shearing, ultrathermic cutting) are not expected to result in the take of marine mammals and, therefore, are not discussed further.

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A detailed description of the planned NES1 project is provided in the **Federal Register** notice for the proposed IHA (88 FR 76576, November 6, 2023). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Table 1 -- Estimated Timing and Duration by Month of Pile Installation and Removal Activities

Activity		April	May	June	July	August	September	October	November	Total
36-inch (91-cm) or 24-inch (61-cm) stability template pile installation	Piles	27	14	14	10	10	3	3	0	81
	Hours	6.75	3.50	3.50	2.5	2.5	0.75	0.75	0	20.25
36-inch (91-cm) or 24-inch (61-cm) stability template pile removal	Piles	0	27	13	13	13	10	4	1	81
	Hours	0	6.75	3.25	3.25	3.25	2.5	1	0.25	20.25
Sheet pile vibratory hammer removal	Piles	-	-	-	-	-	-	-	-	-
	Hours	10	45	60	60	13	12	4	2	206
Total hours		16.75	55.25	66.75	65.75	18.75	15.25	5.75	2.25	246.50

Dates and Duration

The POA anticipates that NES1 in-water construction activities will begin on April 1, 2024 and extend through November 2024. In-water pile

installation and removal associated with the NES1 project is anticipated to take place over approximately 246.5 hours on 110 nonconsecutive days between these dates. While the exact sequence of demolition and construction is uncertain, an estimated schedule of sheet pile removal and temporary stability template pile installation and removal is shown in table 1.

A detailed description of the timing and sequencing of the NES1 project is provided in the **Federal Register** notice for the proposed IHA (88 FR 76576, November 6, 2023). Since that time, no changes have been made to the dates or duration. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for more information regarding the dates and duration of the NES1 project.

Specific Geographic Region

The Municipality of Anchorage is located in the lower reaches of Knik Arm of upper Cook Inlet (see figure 2–1 in the POA's application). The POA sits on the industrial waterfront of Anchorage, just south of Cairn Point and north of Ship Creek (lat. 61°15′ N, long. 149°52′ W; Seward Meridian). Knik Arm and Turnagain Arm are the two branches of upper Cook Inlet, and Anchorage is located where the two arms join. The POA's boundaries currently occupy an area of approximately 0.52 km^2.

A detailed description of the specific geographic region of the NES1 project is provided in the **Federal Register** notice for the proposed IHA (88 FR 76576, November 6, 2023). Since that time, no changes have been made to the specific geographic region. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for more information regarding the specific geographic region of the NES1 project.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to the POA was published in the **Federal Register** on November 6, 2023 (88 FR 76576). That notice described, in detail, the POA's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. In that notice, we requested public input on the request for authorization described therein, our analyses, the proposed authorization, and any other aspect of the notice of proposed IHA, and requested that interested persons submit relevant information, suggestions, and comments.

During the 30-day public comment period, NMFS received comments from the Center for Biological Diversity (CBD) and Eklutna, Inc. NMFS also received a letter from United States Geological Survey stating that they had no comment. All relevant, substantive comments, and NMFS' responses, are provided below. The comments and recommendations are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.* Please see the comment submissions for full details regarding the recommendations and supporting rationale.

Comment 1: The CBD opposed NMFS' issuance of an IHA for construction and associated activities related to the NES1 project, stating that the proposed actions would further imperil the already critically endangered Cook Inlet beluga whale (CIBW) and that ''most of the proposed activities should not be authorized until and unless [NMFS] can ensure that take will not impede the survival and recovery of the [CIBW] population.''

Response: NMFS shares CBD's concern regarding the impacts of human activities on CIBWs and is committed to supporting the conservation and recovery of the species. Under section 101(a)(5)(D) of the MMPA, NMFS considers the at risk status of CIBWs (and other species) in both the negligible impact analysis and through our consideration of impact minimization measures that support the least practicable adverse impact on those species. For example, the IHA for the NES1 project includes a requirement to implement shutdown zones for CIBWs that encompass the estimated Level B harassment zones. However, section 101(a)(5)(D) also mandates that NMFS ''shall issue'' an IHA if we are able to make the necessary findings for any specified activity for which incidental take is requested.

In accordance with our implementing regulations at 50 CFR 216.104(c), we use the best available scientific evidence to determine whether the taking by the specified activity within the specified geographic region will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses. Based on the best scientific evidence available, NMFS determined that the take incidental to POA's NES1 project would have no more than a negligible impact on the affected species and stocks, including CIBW, and no unmitigable adverse impact on the availability of marine mammals for subsistence uses. Moreover, NMFS has required through the IHA implementation of mitigation and monitoring measures that balances the safety needs of this demolition project with reducing potential impacts to CIBWs and other marine mammals to the lowest level practicable, thereby providing the means of effecting the least practicable adverse impact on the affected species and stocks of marine mammals.

Further, as described in the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), data from several years of scientific monitoring at the POA during previous work involving pile driving (occurring April through November) demonstrate there is no significant difference in beluga whale sightings during and in absence of pile driving (Kendell and Cornick, 2016). While we do anticipate some behavioral modifications to occur, these will likely be limited to increased travel speeds, reduced vocalizations, and potentially traveling in more cohesive groups (Kendell and Cornick, 2016). However, we anticipate behavior will return to normal after the whales move past the POA (*e.g.,* when they reach productive foraging grounds north of the POA) as these areas would not be ensonified by pile driving noise. There is no evidence CIBWs have abandoned foraging in Knik Arm due to pile driving noise or that exposure to pile driving noise has resulted in more than a negligible impact to the CIBW population (*e.g.,* 61N Environmental, 2021, 2022a, 2022b, 2022c; Easley-Appleyard and Leonard, 2022). In light of the mitigation and monitoring measures and scientific data to date, we anticipate the impacts of any Level B harassment to CIBWs will be limited to short-term, mild to moderate behavioral changes and will not affect the fitness of any individuals. Therefore, NMFS' negligible impact determination is well supported and the authorized take for the NES1 project is neither reasonably expected nor likely to adversely affect the stock through effects on annual rates of recruitment or survival and thus, will not contribute to or exacerbate the stock's decline. Additionally, the NMFS Alaska Regional Office issued a Biological Opinion (BiOp) on December 15, 2023, under section 7 of the Endangered Species Act (ESA), on the issuance of an IHA to the POA under section 101(a)(5)(D) of the MMPA by the NMFS Office of Protected Resources (OPR) that determined that the issuance of the IHA is not likely to jeopardize the continued existence of CIBWs.

CBD cited a letter from the Marine Mammal Commission (MMC) submitted to NMFS in response to the issuance of an IHA for the POA's Petroleum and Cement Terminal (PCT) project (MMC, 2020) that specifically recommended for

POA construction activities, that the Service ''defer issuance of the final incidental harassment authorizations to [the POA] or any other applicant proposing to conduct sound-producing activities in Cook Inlet until [it] has a reasonable basis for determining that authorizing any additional incidental harassment takes of Cook Inlet beluga whales would not contribute to or exacerbate the stock's decline.'' NMFS responded to this recommendation in the **Federal Register** notice of the final IHA for the PCT project (*e.g.,* 85 FR 19294, April 1, 2020) and we incorporate that response by reference. In summary, that notice describes how there is no evidence that exposure to pile driving noise in Knik Arm has resulted in more than a negligible impact to the CIBW population. Therefore, NMFS negligible impact determination was well supported and the authorized take for the PCT project was neither reasonably expected nor likely to adversely affect the stock through effects on annual rates of recruitment or survival. Thus NMFS had a reasonable basis for determining that authorizing take incidental to the PCT project would not contribute to or exacerbate the stock's decline. Since the publication of this notice, no new information has become available that would suggest that determination was incorrect. Similarly, NMFS' independent evaluation of the best scientific evidence in this case supports our negligible impact determination and our finding that the authorized take for the NES1 project is neither reasonably expected nor likely to adversely affect the stock through effects on annual rates of recruitment or survival. Thus, NMFS has a reasonable basis for determining that authorizing take incidental to the NES1 project would not contribute to or exacerbate the stock's decline. NMFS did not receive any recommendations from the MMC regarding the proposed IHA for the NES1 project.

Finally, we also note CBD's suggestion that this IHA authorizes the subject construction activities. We note that NMFS does not have authority under the MMPA or other statute to authorize the specified activity. NMFS' authority pertains only to the authorization of marine mammal take incidental to that activity and to the prescription of appropriate mitigation, monitoring, and reporting requirements.

Comment 2: The CBD expressed concern regarding uncertainty in the trends of the CIBW population status. They stated that ''changes in survey methods bring into question the approach of determining any trend in population status.'' They cited scientific studies that confirm a negative trend in the population status of CIBWs.

Response: CBD is incorrect in that survey methods for detecting trends in CIBW population have changed; the survey field methods are essentially unchanged since 2004 (Paul Wade, personal communication, December 11, 2023). The analysis methods used to detect trends in the CIBW population have been updated and implemented in recent studies examining the CIBW population, notably Sheldon and Wade (2019) and Goetz *et al.* (2023).

Results of recent studies, including those cited by CBD, provide evidence that the CIBW population increased between 2004 and 2010, declined after 2010, and increased again from 2016 to 2022 (Jacobsen *et al.,* 2020; Shelden and Wade, 2019; Warlick *et al.,* 2023; Goetz *et al.,* 2023). While there is some uncertainty around CIBW population trend analyses, the results of these four studies are consistent in showing general trends. Thus, while the CBD were correct that some studies confirm a negative trend in beluga whale abundance, recent studies, which NMFS considers the best scientific information available, suggest this trend may now be increasing. Additional data in the coming years will help to inform whether the recent positive trend in the CIBW population will continue.

Comment 3: The CBD states that NMFS must conduct a comprehensive analysis of all CIBW take and asserts that NMFS should place an overall cap on authorizations for CIBW incidental take. They state that the various construction, vessel traffic, oil and gas, and other activities are cumulatively threatening the conservation and recovery of CIBWs. CBD also provides examples for the number of takes authorized by NMFS for various time periods, citing Migura and Bollini (2021) and recent authorizations to the POA.

Response: We note first that the Migura and Bollini (2021) paper cited by CBD seems to have led to a misunderstanding of the takes authorized or permitted by NMFS. In summary, CBD asserts that NMFS authorized nearly 120,000 takes of CIBWs from 2017 to 2025 and that in 2020 alone, NMFS authorized the equivalent of 50 percent of the entire CIBW population to be ''incidentally'' harassed by industrial projects in the Inlet, such as oil and gas development and pile driving activities.

The vast majority of the asserted ~120,000 total takes (99 percent), including all of the very small amount of take by Level A harassment, were authorized under directed research or enhancement permits, which directly support research or actions identified in the Recovery Plan to address CIBW recovery goals. Further, the vast majority (~99 percent) of the total permitted research or enhancement take numbers cited by CBD are low-level MMPA Level B harassment from remote or non-invasive procedures that are considered not likely to adversely affect listed species pursuant to the ESA (*i.e.,* no associated take under the ESA is either expected to occur or exempted for those specific activities).

Regarding the comprehensive evaluation and minimization of permitted takes, we reference the analysis that has already been completed through NMFS' 2019 Biological and Conference Opinion on the Proposed Implementation of a Program for the Issuance of Permits for Research and Enhancement Activities on Cetaceans in the Arctic, Atlantic, Indian, Pacific, and Southern Oceans (NMFS, 2019), which determined that the research and enhancement takes permitted by the program would not jeopardize the existence of any of the affected species. As part of our programmatic framework for permitting directed take of ESA species, the Permits and Conservation Division will continue to closely evaluate the number and manner of CIBW takes requested by each applicant, how the proposed research ties to recovery plan goals, and the collective number of authorized and requested takes to consider the potential cumulative impact of the activities to the population. Each directed take annual report is reviewed to understand how authorized takes were actually used and to closely monitor the impacts that permitted research methods are having on the target animals.

Regarding the incidental takes authorized for 2020, those takes represent instances of exposure above the Level B harassment threshold that could occur within a day. In other words, if those approximately 130 takes were assumed to be 130 separate individual whales, it would mean that those individual whales were each behaviorally disturbed on one day in that year. The more likely scenario is that some of those 130 exposures were takes of the same whale on a few different days, and in fact a lesser number of individuals were taken, but still on only a few days within a year. In all cases, the necessary findings under MMPA and ESA were made prior to the authorization of the take.

Neither the MMPA nor NMFS' codified implementing regulations call for consideration of the take resulting from other activities in the negligible

impact analysis. The preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989) states, in response to comments, that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the baseline. Consistent with that direction, NMFS has factored into its negligible impact analysis the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline (*e.g.,* as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors (such as incidental mortality in commercial fisheries, Unusual Mortality Events (UMEs), and subsistence hunting); *see* the Negligible Impact Analyses and Determinations section of this notice of issuance). The 1989 final rule for the MMPA implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There, NMFS stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. In this case, this ITA as well as other ITAs currently in effect or proposed within the specified geographic region, are appropriately considered an unrelated activity relative to the others. The ITAs are unrelated in the sense that they are discrete actions under section 101(a)(5)(D) issued to discrete applicants.

Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the take incidental to a ''specified activity'' will have a negligible impact on the affected species or stocks of marine mammals and will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence uses. NMFS' implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals (see 50 CFR 216.104(a)(1)). Thus, the ''specified activity'' for which incidental take coverage is being sought under section 101(a)(5)(D) is generally defined and described by the applicant. Here, the POA was the applicant for the IHA, and we are responding to the specified activity as described in that application (and making the necessary findings on that basis). Therefore, setting limits on the number and types of CIBW takes across all activities in Cook Inlet would not be an appropriate requirement of an MMPA ITA. The take estimates NMFS authorizes represent the upper limits for individuals and some instances of take may represent multiple exposures to a single individual.

Separately, setting blanket take limits may not be meaningful, as the nature and intensity of impacts from a given activity can vary widely. For example, an animal exposed to noise levels just above our harassment threshold in a non-critical area may experience a small behavioral change with no biological consequence while an animal exposed to very loud noise levels (but lower than levels that would result in a permanent threshold shift (PTS)) in an area where active critical foraging occurs could result in behavioral changes that may be more likely to impact fitness. While both of these examples would be characterized as Level B harassment, the resulting impact on the population could be different. Context differences such as these are analyzed in our negligible impact analysis for each application under the MMPA.

Through the response to public comments in the 1989 implementing regulations, NMFS also indicated (1) that we would consider cumulative effects that are reasonably foreseeable when preparing a National Environmental Policy Act (NEPA) analysis, and (2) that reasonably foreseeable cumulative effects would also be considered under section 7 of the ESA for ESA-listed species, as appropriate. Accordingly, NMFS has written an Environmental Assessment (EA) that addressed cumulative impacts of the NES1 project and all past, present and reasonably foreseeable future actions. Additionally, the NMFS Alaska Regional Office issued a BiOp on December 15, 2023, under section 7 of the ESA, on the issuance of an IHA to the POA under section 101(a)(5)(D) of the MMPA by the NMFS OPR that independently considered the reasonably foreseeable cumulative effects of activities on ESA-listed species.

Comment 4: The CBD asserts that NMFS's negligible impact determination is arbitrary and capricious and that the specified activities would have greater than a negligible impact on CIBWs. The CBD claims that NMFS failed to substantiate its assumption that impacts are negligible because CIBWs remained in the area during similar construction activities and that NMFS underestimated the impacts of pile driving on CIBWs. They state that pile driving threatens marine mammals by potentially displacing them from key foraging habitat, causing hearing loss, masking communications, and interfering with natural behaviors. They cite several studies regarding behavioral responses of marine mammals to pile driving.

Response: NMFS disagrees with the CBD's claim that NMFS failed to substantiate our assumptions that impacts to CIBWs are negligible in our determination. In the Negligible Impact Analysis and Determination section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and this notice of issuance, we describe how the take estimated and authorized for the NES1 project will have a negligible impact on all of the affected species, including CIBWs (as discussed above). We discussed how this determination is based upon the authorized number of CIBWs that might be exposed briefly during the 110 nonconsecutive days of activity, the low level of behavioral harassment that might result from an instance of take that could occur within a year, and the likelihood that the mitigation measures required further lessen the likelihood of exposures. NMFS has considered the status of CIBWs in its analysis, as well as the importance of reducing impacts from anthropogenic noise, but nonetheless, there is no evidence that brief exposure to low level noise causing Level B harassment would have a greater than negligible impact on CIBWs.

NMFS' negligible impact finding considers a number of parameters including, but not limited to, the nature of the activities (*e.g.,* duration, sound source), effects/intensity of the taking, the context of takes, and mitigation. For CIBWs, NMFS' finding did account for data demonstrating that CIBWs are not discouraged from entering Knik Arm and traveling to critical foraging grounds to the north when pile driving activities, such as those proposed by NES1, are occurring (*e.g.,* 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022), but it also relied on other data that show at most, low-level behavioral responses of CIBWs to pile driving activities. For example, during the POA's PCT and South Floating Dock (SFD) pile driving activities, CIBWs were more likely to display no reaction or to continue to move towards the POA during pile installation and removal (61N Environmental, 2021, 2022a, 2022b). In situations during which CIBWs showed a possible reaction to pile driving, individuals were observed either moving away from the pile driving activities or increasing their rate of travel (61N Environmental, 2021, 2022a, 2022b). Other behavioral responses observed in relation to pile driving activities include moving silently

through the area, decreased sighting durations, and the formation of more cohesive groups (Kendall and Cornick, 2015).

NMFS understands that marine mammals will have varying responses to elevated noise levels resulting from pile driving activities such as masking of communication and foraging signals, avoidance behaviors, and more. However, NMFS disagrees with CBD that we have underestimated the impacts of pile driving on beluga whales. Marine mammal data collected at the POA during pile driving activities, as described above, provides evidence that effects of pile driving on CIBWs will be limited to temporary modifications in behavior such as increased swim speeds, tighter group formations, and cessation of vocalizations, but not through the loss of foraging capabilities or abandonment of habitat. Further, while masking of CIBW signals can have a profound impact on the communication of CIBWs (*e.g.,* Brewer *et al.,* 2023), the short-term duration and limited areas affected by the NES1 project make it very unlikely that the fitness of individual marine mammals would be impacted. In addition, the frequency range of pile driving activities is typically below 1 kHz (Richardson *et al.,* 1995), which is below the peak frequencies for many CIBW communication signals (Brewer *et al.,* 2023). Therefore, while expected impacts to CIBWs from the NES1 project are considered Level B harassment events, they are events with relatively little consequence for individuals in terms of energetic effects or foregone opportunities to engage in important foraging or social behaviors.

While exposure to elevated noise levels associated with the NES1 project may result in low-level behavioral changes in CIBWs, NMFS' review of the best available scientific evidence, as summarized and cited herein, demonstrates that these responses do not rise to the level of having adverse effects on the reproduction or survival of CIBWs. CBD provides no evidence to the contrary. Therefore, NMFS has appropriately concluded that the activity will have a negligible impact on the CIBW population.

Comment 5: The CBD expressed concern regarding the take estimates for CIBWs proposed by NMFS. They state that the take estimates fail to explain how pods of animals are accounted for and improperly discounts the estimated CIBW take with a 59 percent adjustment. They suggest that this supposed failure may result in a higher take than anticipated. They believe that take should be estimated without considering the demonstrated efficacy of the proposed mitigation requirements, with expected benefits of the mitigation requirements being described only separately.

Response: CBD is concerned that exposure of one pod of whales to harassment by the construction could exceed the take authorized. They cite McGuire *et al.* (2020) which suggests CIBW groups can be between 61 and 313 whales. CBD is correct that there have been large observations of CIBW pods, and that if one very large pod appeared near the POA during pile driving activities, it could result in the POA meeting or exceeding authorized take for this species. However, such large pods are not expected to be observed near the POA based on the best scientific information available, including recent marine mammal monitoring efforts. The mean (median, standard deviation) CIBW group size observed during the 2020 through 2022 POA and NMFS marine mammal monitoring efforts in Knik Arm were 4.28 (3, 4.86) whales (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022). Further, the 95 percentile group size of CIBWs observed during these years was 12.30 individuals. This means that of the 495 documented CIBW groups in these data sets, 95 percent consisted of fewer than 12.3 whales; 5 percent of the groups consisted of more than 12.3 whales. Lastly, the largest group observed during these efforts was 53 individuals. Therefore, NMFS believes that the 72 takes by Level B harassment authorized for CIBW during the authorized one-year period adequately accounts for the possibility of the POA taking multiple pods (or groups) of CIBWs.

The CBD stated that the 59 percent adjustment is ''based on one data point'' from the PCT project monitoring program. This is incorrect. As described in the Estimated Take sections of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and this notice of issuance, this adjustment was calculated by including data from all observations from April to November for each year of the PCT project, the same time frame over which the POA will be conducting the NES1 project. Between the two phases of the PCT project, 90 total Level B harassment takes were authorized and 53 were potentially realized (*i.e.,* 53 CIBWs were observed within estimated Level B harassment zones), equating to an overall percentage of 59 percent (Note that simple occurrence within the estimated harassment zone in and of itself does not demonstrate that a take has occurred). In our calculations for estimating CIBW take in the Estimated Take sections of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and this notice of issuance, NMFS did preliminarily calculate take for CIBWs without the 59% adjustment (*i.e.,* 122 instances of take). However, we disagree with the CBD that the adjustment for mitigation requirements should be described separately and not be considered in the take estimation. This 59% adjustment is based on the effectiveness of monitoring during the PCT Phase 1 and PCT Phase 2 projects, which most accurately reflect the current POA marine mammal monitoring program, the current program's effectiveness, and CIBW occurrence in the proposed project area. It is anticipated that the POA monitoring program during the NES1 project will be similar to that of the program implemented during the PCT project. Therefore, NMFS has determined that it is appropriate to include the adjustment in our calculation of authorized take.

Comment 6: The CBD assert that the root mean square (RMS) thresholds of 120-decibels (dB) referenced to 1 micropascal (re 1µPa) for continuous and 160 dB re 1µPa for impulsive or intermittent sources are insufficiently conservative to protect CIBWs. They cite Mooney *et al.* (2018), which suggests that wild beluga whales have highly sensitive hearing. They state that, at a minimum, NMFS should use a 120-dB threshold for all sound sources.

Response: NMFS disagrees that we should apply a 120-dB threshold for Level B harassment from all sound sources based on beluga hearing sensitivity. First, we provide here some necessary background on implementation of acoustic thresholds. NMFS has historically used generalized acoustic thresholds based on received levels to predict the occurrence of behavioral disturbance rising to the level of Level B harassment, given the practical need to use a relatively simple threshold based on information that is available for most activities. Thresholds were selected largely in consideration of measured avoidance responses of mysticete whales to airgun signals and to industrial noise sources, such as drilling. The selected thresholds of 160-dB RMS sound pressure level (SPL) and 120-dB RMS SPL, respectively, have been extended for use for estimation of behavioral disturbance rising to the level of Level B harassment associated with noise exposure from sources associated with other common activities.

Sound sources can be divided into broad categories based on various criteria or for various purposes. As discussed by Richardson *et al.* (1995), source characteristics include strength of signal amplitude, distribution of sound frequency and, importantly in context of these thresholds, variability over time. With regard to temporal properties, sounds are generally considered to be either continuous or transient (*i.e.,* intermittent). Continuous sounds, which are produced by the industrial noise sources (such as vibratory pile driving) for which the 120-dB behavioral threshold was selected, are simply those for which sound pressure levels remain above background sound during the observation period (ANSI, 2005). Intermittent sounds are defined as sounds with interrupted levels of low or no sound (NIOSH, 1998). Simply put, a continuous noise source produces a signal that continues over time, while an intermittent source produces signals of relatively short duration having an obvious start and end with predictable patterns of bursts of sound and silent periods (*i.e.,* duty cycle) (Richardson and Malme, 1993). It is this fundamental temporal distinction that is most important for categorizing sound types in terms of their potential to cause a behavioral response. For example, Gomez *et al.* (2016) found a significant relationship between source type and marine mammal behavioral response when sources were split into continuous (*e.g.,* shipping, icebreaking, drilling) versus intermittent (*e.g.,* sonar, seismic, explosives) types. In addition, there have been various studies noting differences in responses to intermittent and continuous sound sources for other species (*e.g.,* Neo *et al.,* 2014; Radford *et al.,* 2016; Nichols *et al.,* 2015).

Given the existing paradigm—dichotomous thresholds appropriate for generic use in evaluating the potential for behavioral disturbance rising to the level of Level B harassment resulting from exposure to continuous or intermittent sound sources—the CBD does not explain why potential harassment from an intermittent sound source (*i.e.,* impact pile driving) should be evaluated using a threshold developed for use with continuous sound sources. As we have stated in prior responses to this recommendation, consideration of the preceding factors leads to a conclusion that the 160-dB threshold is more appropriate for use for intermittent sources such as impact pile driving than the 120-dB threshold.

Further, any dB-based threshold itself is a step-function approach (*i.e.,* animals exposed to received levels above the threshold are considered to be ''taken'' and those exposed to levels below the threshold are not); but, in reality, it is in fact intended as a sort of mid-point of likely behavioral responses (which are extremely complex depending on many factors including species, noise source, individual experience, and behavioral context). What this means is that, conceptually, the function recognizes that some animals exposed to levels below the threshold will in fact react in ways that are appropriately considered take, while others that are exposed to levels above the threshold will not. Use of a specific dB threshold allows for a simplistic quantitative estimate of take, while we can qualitatively address the variation in responses across different received levels in our discussion and analysis.

Lastly, NMFS has acknowledged that the scientific evidence indicates that certain species are, in general, more acoustically sensitive than others. In particular, harbor porpoise and beaked whales are considered to be behaviorally sensitive, and it may be appropriate to consider use of lower Level B harassment thresholds for these species. Beluga whales have been observed to have sensitive hearing (<80 dB) in the frequency range of 16 to 100 kilohertz (kHz) (Mooney *et al.,* 2018). However, noise from pile driving activities is typically below 1 kHz (Richardson *et al.,* 1995), well outside this sensitive hearing range. Therefore, based on the best available science (*i.e.,* Mooney *et al.,* 2018), sensitivity in CIBW hearing does not support the application of a 120-dB threshold for Level B harassment from all pile driving sound sources. NMFS is currently engaged in an ongoing effort to develop updated guidance regarding the effects of anthropogenic sound on marine mammal behavior, and in this effort NMFS is considering this issue for assessing Level B harassment. However, until this work is completed and new guidelines are identified (if appropriate), NMFS will continue using the historical Level B harassment thresholds (or derivations thereof) and will appropriately evaluate behavioral disturbance rising to the level of Level B harassment due to intermittent sound sources relative to the 160-dB threshold.

Comment 7: CBD states that NMFS should undertake the analysis using the framework provided by Southall *et al.* (2023) to determine the vulnerability of marine mammals to noise disturbance.

Response: Southall *et al.* (2023) present an analytical framework for assessing the relative risk of anthropogenic disturbances, such as those resulting from noise, on marine vertebrates. This framework is based on both species-specific 'vulnerability' (which accounts for population, life history, auditory communication systems, and environmental factors) and species-specific and scenario-specific 'severity' (which includes population modeling methods for acute (short-term, project specific) exposure events) and a spatial-temporal-spectral algorithm for estimating a disturbance magnitude metric from aggregate events (long-term, multiple years, and or multiple projects). For each species and exposure scenario, a vulnerability and severity risk rating are computed, which allows for the assessment of the overall risk of each scenario for each species. Lastly, in this framework a subjective consideration of confidence in the risk assessment scores is provided. The Southall *et al.* (2023) framework has been used to model results from the construction and operation of wind farms and seismic surveys.

While the framework presented by Southall *et al.* (2023) is a useful tool for evaluating risk of marine mammals to exposure events, such as pile driving activities, it is intended to be used as a complementary tool to use when implementing marine policies. It is ''not intended to replicate or supersede current regulatory guidelines for auditory or behavioral impact'' (Southall *et al.,* 2023). Furthermore, the framework presented by Southall *et al.* (2023) does not estimate defined impacts such as injury (equivalent to Level A harassment) or behavioral disturbance (equivalent to Level B harassment) that would inform take estimates. In the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and this notice of issuance, NMFS discusses the anticipated impacts of the NES1 project activities in the context of species status, which included an assessment of species population trends, life history traits, auditory communication systems, and environmental factors as well as estimated impacts of project activities. Thus, for this action, NMFS has determined that the application of the framework proposed by Southall *et al.* (2023) would not provide meaningful additive information in our assessment of take or in our negligible impact determination, and therefore, we do not apply it here.

Comment 8: The CBD states that NMFS' negligible impact determination fails to adequately consider adverse impacts to CIBW critical habitat and biologically important areas (BIAs). In addition, they assert that the proposed NES1 project does not avoid or impose

any specific mitigation for the year-round CIBW BIA.

Response: In our analysis, NMFS considered the potential for impacts to CIBWs and their habitat in general (*see* the Potential Effects of Specified Activities on Marine Mammals and their Habitat section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023). The CIBW Recovery Plan (NMFS, 2016b) determined that CIBWs having waters that do not restrict passage within or between critical habitat areas and having waters with in-water noise levels below levels resulting in abandonment of critical habitat were essential for the conservation of this species. While some marine mammals—largely harbor porpoise, which are generally considered as one of the most behaviorally sensitive marine mammal species—have been observed to abandon or reduce time spent in preferred habitat during periods of increased anthropogenic noise (*e.g.,* Wartzok *et al.,* 2003; Carstensen *et al.,* 2006; Dähne *et al.,* 2012; Forney *et al.,* 2017), CIBW presence in the project area has persisted during numerous periods of pile driving, dredging, and other construction activities at the POA. Previous monitoring data indicates that CIBWs are not abandoning critical habitat and are able to transit through the project area to primary foraging areas north of the Port. Instead, they travel more often and faster past the POA, more quietly, and in tighter groups (Kendall and Cornick, 2015; 61N Environmental, 2021, 2022a, 2022b). Moreover, marine mammal monitoring results from the POA and NMFS (*e.g.,* 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022) suggest that the areas that are expected to be impacted by noise during the NES1 project are not particularly important feeding or calving areas for CIBWs. Rather CIBWs typically transit through the area adjacent to the POA to foraging areas located to the north (*e.g.,* Six Mile Creek, Eagle River, Eklutna River). For these reasons, NMFS expects the effects that sounds from the NES1 project will have on these essential features will be small (see NMFS, 2023a).

Concerning BIAs, CBD improperly cited Ferguson *et al.* (2015) when referring to the CIBW BIA. This BIA was updated by Wild *et al.* (2023) as part of the BIA II effort, which built upon the 2015 study but used new methodology and structured expert elicitation principles to update existing BIAs, and identify and delineate new BIAs (see Harrison *et al.,* 2023). In this new effort, Wild *et al.* (2023) defined a static, year-round, small and resident BIA for CIBWs whose boundary is consistent with NMFS' critical habitat designation, (including excluding the area adjacent to POA, illustrating that the area is of low value) (Wild *et al.,* 2023).

In regards to specific mitigation requirements for this year-round BIA, the proposed IHA does include a measure that requires the POA to make all practicable efforts to complete construction activities between April and July when CIBWs are typically found in lower numbers near the POA. However, due to the design of the existing sheet pile wall, the need for demolition to occur in a sequential manner to prevent structural failure, and uncertainty regarding construction progress until work is initiated, the POA cannot commit to restricting pile driving to these months. Given that the location and sequencing of the activity cannot be changed, NMFS has prescribed mitigation measures that affect the least practicable adverse impact on the stock. CBD did not provide a specific recommendation for NMFS to consider.

Comment 9: The CBD stresses that NMFS should have analyzed the potential impact on feeding of preferred prey in making its negligible impact determination.

Response: NMFS provided this information in the Acoustic Impacts section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), and provides additional discussion in the Negligible Impact Analysis and Determination section for CIBWs of this notice. In summary, the habitat near the POA is not typically considered high quality foraging habitat for CIBWs and feeding is not a predominant behavior observed in CIBWs near the POA. Further, there is no evidence to suggest that CIBWs are restricted in transiting between preferred feeding areas during pile driving activities (*e.g.,* 61N Environmental, 2021, 2022a, 2022b, 2022c; Easley-Appleyard and Leonard, 2022). Lastly, any impacts to preferred prey are anticipated to be temporary, and most likely limited to fish avoiding the action area.

Comment 10: The CBD postulates that NMFS' small numbers determination is flawed because the amount of take proposed to be authorized is greater than 12 percent of the CIBW population and that NMFS' definition of small numbers ''conflates this criterion with the negligible impact requirement.'' CBD claims the incidental harassment authorization here violates the MMPA because it does not guarantee that only small numbers of CIBWs and other marine mammals impacted by the POA's activities will be taken.

Response: CBD suggests that by defining small numbers to be relative to the overall population the criterion ends up being similar to the negligible impact finding and that Congress's intent was that the MMPA protect not only populations, but individual marine mammals. We disagree that our small numbers finding is conflated with our negligible impact finding. While ''small numbers'' is simply a percent of the population, our negligible impact finding considers a number of parameters including, but not limited to, the nature of the activities (*e.g.,* duration, sound source), effects/intensity of the taking, the context of takes, and mitigation.

The reference to a take limit of 12 percent for small numbers comes from a 2003 district court opinion (*Natural Resources Defense Council* v. *Evans,* 279 F.Supp.2d 1129 (N.D. Cal. 2003)). However, given the particular administrative record and circumstances in that case, including the fact that our small numbers finding for the challenged incidental take rule was based on an invalid regulatory definition of small numbers, we view the district court's opinion regarding 12 percent as dicta.

In NMFS' Final Rule for taking of marine mammals incidental to geophysical surveys in the Gulf of Mexico (86 FR 5322, January 19, 2021), NMFS fully describes its interpretation and implementation of ''small numbers''. Included as part of that discussion, NMFS explains the concept of ''small numbers'' in recognition that there could also be quantities of individuals taken that would correspond with ''medium'' and ''large'' numbers. As such, NMFS has established that one-third of the most appropriate population abundance number—as compared with the assumed number of individuals taken—is an appropriate limit with regard to ''small numbers.'' This relative approach is consistent with the statement from the legislative history that ''[small numbers] is not capable of being expressed in absolute numerical limits'' (H.R. Rep. No. 97–228, at 19 (September 16, 1981)), and relevant case law (*Center for Biological Diversity* v. *Salazar,* 695 F.3d 893, 907 (9th Cir. 2012) (holding that the U.S. Fish and Wildlife Service reasonably interpreted ''small numbers'' by analyzing take in relative or proportional terms)).

As described in the Small Numbers section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and this notice of

issuance, NMFS is authorizing take of less than 2 percent for eight stocks and 22 percent for one stock (*i.e.,* CIBWs) and based on this analysis, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Comment 11: CBD asserts that NMFS relies on visual monitoring measures that it claims are ''known to be ineffective and inadequate'' to protect marine mammals.

Response: NMFS disagrees the mitigation and monitoring measures included in this authorization are ineffective and inadequate and CBD does not provide additional information to support their claim. The IHA requires a minimum of two Protected Species Observer (PSO) stations, and that at each station, at least two PSOs must be on watch at any given time. Further, the PSO stations must be located so that the PSOs can fully monitor the shutdown zones and call for activities to be delayed when CIBWs are entering or observed within the Level B harassment zones. The POA has a demonstrated history of successfully implementing a rigorous monitoring program during recent construction projects in Knik Arm (*i.e.,* PCT and SFD), and monitoring data from these projects provides evidence that their PSOs are capable of observing belugas out to 11,057-m from the NES1 project site. This distance is dependent on several factors such as visual acuity, sea state, glare, animal behavior/body type, speed of travel for vessel and animal, *etc.*; but this demonstrates that it is possible for PSOs to detect and identify marine mammals to the species level several km from the source, including CIBWs. In addition, Easley-Appleyard and Leonard (2022) reported that PSOs who worked for the PCT monitoring program expressed that they were effective at detecting CIBWs from two monitoring stations despite occasional challenges related to the timing of the detection and the ability to track multiple CIBW groups.

The majority of the work for this project will be the vibratory removal of sheet piles, which has an estimated Level B harassment distance of 1,954-m. The largest zones will be associated with the installation and removal of the temporary steel pipe piles, which could have estimated Level B harassment zones up to 6,861-m. These distances are well within the distances that PSOs at the POA have effectively detected CIBWs as described above. Further, there are mitigation measures preventing pile driving from occurring if visibility in any portion of the shutdown zone (*i.e.,* the Level B harassment zone for CIBWs) is obscured by weather or sea state. Therefore, we find the visual monitoring plan can reasonably be expected to be an effective tool at detecting marine mammals, ensuring the mitigation measures are adhered to.

Comment 12: CBD suggests that construction should be restricted from August through October, and further states that NMFS ''should also consider time area restrictions that would further mitigate impacts to beluga whales and other marine mammals,'' though it provides no recommendations.

Response: Time-area restrictions were considered for this project, in addition to the PSO requirements. We note that August through November are months with high CIBW abundance, and NMFS expects that the POA will likely have to shut down pile driving activities more frequently during that time period due to the increased presence of CIBWs in Knik Arm. NMFS is requiring the POA to complete in-water work as early in the construction season as is practicable. However, the design of the existing sheet pile wall, the safety requirements of the demolition sequencing, and the likely highly adaptive nature of the field work once construction commences do not allow NMFS to practicably restrict pile driving to any specific time periods or areas (*e.g.,* only allowing pile driving April through July). Furthermore, there are potential consequences of pausing or delaying the construction season, including de-rating the structural capacity of the existing docks, a shutdown of dock operations due to deteriorated conditions, or an actual collapse of one or more dock structures. The potential for collapse increases with schedule delays, due to both worsening deterioration and the higher probability of a significant seismic event occurring. Any of these scenarios could have dire consequences for the populations of Anchorage and Alaska who are served by the POA. In this context, NMFS has determined that the current mitigation and monitoring measures affect the least practicable adverse impact on marine mammal species and stocks.

Comment 13: CDB states that NMFS failed to consider other mitigation measures to reduce the proposed activities' impacts to the least practicable level such as bubble curtains placement configurations, pile caps, physical barrier technologies, such as dewatered cofferdams, passive acoustic monitoring (PAM), and sound source verification (SSV) studies.

Response: CBD does not provide any specific information contradicting NMFS' determinations concerning whether these measures should be included in the suite of mitigation requirements determined to provide the means of effecting the least practicable adverse impact on the affected species or stocks of marine mammals. CBD states that bubble curtains were required for previous POA pile driving activities, and recommends that one could be placed beyond the construction area for the NES1 site due to spacing and safety concerns. They also state that NMFS could consider other noise mitigation technologies such as pile caps, dewatered cofferdams, and other physical barrier mitigation. CBD is correct that NMFS has required the POA to use bubble curtains for other POA pile driving activities. During construction of the PCT, two different types of bubble curtain systems were utilized, confined bubble curtain systems and unconfined bubble curtain systems. Both bubble curtain systems were expensive to construct, maintain, and repair. It was necessary to build several versions of each model for each pile size in case of damage and so that two or more piles could be simultaneously staged and prepared for installation, which was done in an effort to save time. Both bubble curtain systems were time-consuming to deploy and retrieve, adding an average of 6 hours (confined) and 4 hours (unconfined) of deployment and retrieval time to each pile. Thus, as described in the Proposed Mitigation section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), adding a requirement for a bubble curtain may hinder production of the NES1 project, which could push the in-water construction schedule further into the late summer months, which are known for higher CIBW abundance in lower Knik Arm, thus lengthening the duration of potential interactions between CIBW and in-water works. Lastly, data from prior SSV studies conducted during the PCT project (*i.e.,* Illingworth & Rodkin (I&R), 2021a, 2022b), yielded mixed results regarding the efficacy of bubble curtains for use with vibratory hammers (which makes up the majority of the NES1 project). Therefore, a requirement to use bubble curtains in this case (aside from the cost and safety concerns) would likely have a detrimental impact over the full scope of the project.

Further, dredging associated with the NES1 project will frequently require barges and vessels to maneuver through the area between the sheet pile face and the disposal area located in the middle of Knik Arm. Additional barges to stage

air compressors for a bubble curtain would add multiple anchor lines that would present a logistical challenge to the frequent vessel transit and increase the risk of a safety incident, particularly if there were to be an uncontrolled release of sediments from a structure collapse. Additional vessels, air compressors, and crew also increase the cost and potential negative impacts of the project. The POA believes this combination of logistical challenges, time requirements, and safety considerations make it impractical for the POA to use a bubble curtain for this project. NMFS has considered input from the POA, as well as other information, and concurs that use of bubble curtains is not practicable in this case. Additional information regarding practicability and efficacy concerns with using bubble curtains during the NES1 project were included in the Proposed Mitigation section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) and the Mitigation section of this notice.

Pile cap cushions are commonly used in conjunction with an impact hammer to reduce stress on a pile during hammer blows. Their efficacy as an underwater sound attenuation measure during pile installation remains uncertain. There are safety and logistical concerns with the use of a pile cap cushion as they have been known to combust from the friction created during impact pile driving. The NES1 project does not involve the installation of piles using an impact hammer. Pile cap cushions are not compatible with vibratory pile installation or removal, or with sheet pile installation or removal. Therefore, the inclusion of pile caps is not a feasible option for this project.

Other physical barrier technologies, such as dewatered cofferdams, would substantially increase project risks, construction schedule and costs. Cofferdams are typically sheet pile structures supported by cylindrical steel piles that would require installation and removal of temporary sheet and cylindrical piles along the entire length of the NES1 face sheets, which would increase potential impacts on CIBWs and other marine species. Other physical barriers installed into Knik Arm would also need to be engineered to a level to resist the tidal forces of Knik Arm, and would likely require pile supports, increasing impacts, duration, and cost. Thus, NMFS has determined that the recommendation of applying other physical barriers to mitigate noise from construction activities is not an appropriate addition to the required suite of mitigation measures for the NES1 project.

In addition, the CBD states that NMFS should require PAM for marine mammals. The use of PAM for real-time mitigation purposes has been used in Cook Inlet for some studies. These efforts have generally not resulted in successful deployment of PAM or useful detections of marine mammals to inform mitigation and monitoring during the activities due to the environmental conditions of the region. For example, a real-time PAM system implemented as part of the 2012 Apache 3D seismic survey program in lower- and mid-Cook Inlet only yielded six confirmed marine mammal detections. One of these detections was of a CIBW, however, it did not result in a shutdown procedure (Lomac-MacNair *et al.,* 2013). Similarly, a real-time PAM program was required in the IHA for the 2015 SAExploration 3D seismic program. This program only detected 15 marine mammal detections (including 2 from CIBWs) over 310 hours. For these reasons, we have determined PAM is not likely to be sufficiently effective at detection for real-time mitigation for the POA's construction activities and, therefore, is not included in the IHA.

Researchers have begun to implement more effective passive acoustic monitors for research purposes at several places in Cook Inlet (*e.g.,* Castellote *et al.,* 2020). However, the framework used by those researchers is impractical, particularly for the POA's planned activity. An article on NOAA's website (*https://www.fisheries.noaa.gov/science-blog/beluga-whale-acoustic-monitoring-survey-post-3*) illustrates the level of customization, expertise, and difficulty required to assemble a passive acoustic mooring to then deploy in the Inlet. Additionally, these instruments are stationary, which means to effectively use these monitors as a means of avoiding harassment of marine mammals during the POA's, the POA would need to build and successfully deploy dozens (or more) of stationary monitors along a route of travel that is subject to change depending upon weather or other environmental and shipping restrictions. Additionally, the data stored on these types of moorings is not accessible until they are retrieved by the researcher who deployed them. In the future, if an established network of passive acoustic monitors with shared access to the data is available, this could be a useful tool for implementing mitigation measures, but is currently not practicable. NMFS looks forward to advances in technology that could make real-time PAM a practicable mitigation measure in these areas in the future.

Lastly, CBD recommends that NMFS should require that in-situ SSV studies be conducted to ensure that the Level A and Level B harassment zones are sufficient. Lessons learned from prior SSV studies carried out at the POA (*e.g.,* I&R, 2021a, 2022b) indicate that Knik Arm is a very challenging environment to collect high quality acoustic data usable by NMFS, the POA, and others due to the presence of strong tidal currents, which can create substantial flow noise in recordings, and prevalent anthropogenic noise, which can mask acoustic signals of interest. Specifically during the NES1 project, multiple barges, tugs, and other support vessels, which can obscure signals of interest, will be within the action area at all times during the project. Further, active dredging and removal of above-water soils, and vessels with generators running will be present at all times. While both the POA and NMFS believe sound source data would be valuable, this measure is not practicable given the known challenges of the area.

Comment 14: CBD asserts that NMFS should require larger exclusion zones.

Response: CBD did not provide any additional information for NMFS to consider to support this recommendation. The exclusion zones proposed in the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) (referred to as shutdown zones) are equivalent to the estimated Level B harassment zone for CIBWs. This is consistent with shutdown zones required in other recent ITAs issued to the POA for construction activities at the Port including the PCT (85 FR 19284, April 6, 2020) and SFD (86 FR 50057, September 7, 2021) projects, which resulted in the number of CIBWs occurring within estimated harassment zones being 59 percent and 7 percent of the authorized take for each project, respectively. Therefore, NMFS disagrees that the final IHA should include larger exclusion zones and requires the exclusion zones proposed in the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) in the final IHA.

Comment 15: The CBD asserts that a 1-year renewal should require new permitting and programmatic analysis of impacts.

Response: NMFS disagrees with this assertion. NMFS' IHA Renewal process meets all statutory requirements. All IHAs issued, whether an initial IHA or a Renewal IHA, are valid for a period of not more than 1-year. Renewal IHAs are limited to another year of identical or nearly identical activities in the same location or the same activities that were not completed within the 1-year period

of the initial IHA. Should a Renewal request be made, additional documentation would be required from the POA that NMFS would make publicly available and would use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS would also confirm, among other things, that the activities would occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information had been received that would alter the prior analysis. If new information has been received that would alter the prior analysis, that information would be analyzed in the notice of the proposed Renewal IHA. A Renewal request would also contain a preliminary monitoring report, specifically to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. Any Renewal request is subject to an additional 15-day public comment period that provides the public an opportunity to review these few documents, provide any additional pertinent information and comment on whether they think the criteria for a Renewal have been met. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a Renewal is 45 days.

In addition to the IHA Renewal process being consistent with all requirements under section 101(a)(5)(D), it is also consistent with Congress' intent for issuance of IHAs to the extent reflected in statements in the legislative history of the MMPA. Through the provision for Renewals in the regulations, description of the process and express invitation to comment on specific potential Renewals in the Request for Public Comments section of each proposed IHA, the description of the process on NMFS' website, further elaboration on the process through responses to comments such as these, posting of substantive documents on the agency's website, and provision of 30 or 45 days for public review and comment on all proposed initial IHAs and Renewals respectively, NMFS has ensured that the public ''is invited and encouraged to participate fully in the agency decision-making process.''

Regarding a programmatic analysis, we refer to our response to Comment 3.

Comment 16: CBD asserts that the proposed activities will have an unmitigable adverse impact on subsistence uses. CBD states that the proposed activities may have an adverse impact on the availability of beluga whales, harbor seals, and Steller sea lions for Native Alaskan subsistence harvest. They also state that the IHA should require consultation with Native Alaskan communities to ensure adequate mitigation for subsistence harvest for harbor seals and Steller sea lions.

Response: The POA sent letters to and conducted follow-up calls with the Kenaitze, Tyonek, Knik, Eklutna, Ninilchik, Salamatof, and Chickaloon Tribes informing them of the proposed project (*i.e.,* timing, location, and features), the availability of the notice of proposed IHA for public comment, and inquiring about any marine mammal subsistence concerns they have. The POA also explained the measures that have been taken or will be taken to minimize any adverse effects of NES1 on the availability of marine mammals for subsistence uses. No Tribes or affected subsistence communities/users expressed concern over subsistence use during the 30-day public comment period for the proposed IHA. One letter was received from Eklutna Inc. requesting that Alaska Native residents with traditional knowledge about marine mammals and the local marine environment be involved in the monitoring and support roles related to the project (*i.e.,* as PSOs) (see Comment 22 Response), but it did not suggest concerns regarding unmitigable adverse impact on subsistence uses. The POA adequately communicated with representative Alaska Native subsistence users and Tribal members to ensure any concerns they had regarding marine mammal subsistence uses would be addressed, hence fulfilling any requirements provided by the MMPA.

Overall, there is little subsistence use of marine mammals near the project area. There has been no subsistence harvest of CIBWs since 2005 (NMFS, 2022d) and subsistence harvest of other marine mammals in upper Cook Inlet is limited to harbor seals. Steller sea lions are rare in upper Cook Inlet; therefore, subsistence use of this species is not common. Residents of the Native Village of Tyonek are the primary subsistence users in the upper Cook Inlet area, however no NES1 activities will take place in or near Tyonek's identified traditional subsistence hunting areas. Additionally, the harvest of marine mammals in upper Cook Inlet is historically a small portion of the total subsistence harvest, and the number of marine mammals harvested in upper Cook Inlet is expected to remain low. The potential impacts from harassment on stocks that are harvested in Cook Inlet would be limited to minor behavioral changes (*e.g.,* increased swim speeds, changes in dive time, temporary avoidance near the POA) within the vicinity of the POA or slight PTS. NMFS has found that the taking of marine mammals incidental to the NES1 project would have a negligible impact on the population, meaning we do not anticipate there to be adverse impacts on the annual rates of recruitment or survival. Therefore, the taking would not impede recovery of CIBW for potential future subsistence use. The full explanation and support for this finding is described further in the Unmitigable Adverse Impact Determination section of this notice.

NMFS has required rigorous mitigation and monitoring measures in the IHA to reduce impacts to CIBWs, Steller sea lions, and harbor seals including shutdown measures at the Level B harassment zone for CIBWs and Level A harassment zone for harbor seals and Steller sea lions if pile driving is occurring and an animal enters the zone. These measures are expected to reduce both the scope and severity of potential harassment takes by reducing the potential for exposure above harassment thresholds. In addition to the mitigation measures, the POA will monitor from elevated platforms at a minimum of two locations dispersed throughout lower Knik Arm. All stations will have at least two NMFS-approved observers on-watch at any given time. Therefore, marine mammal detection effectiveness is expected to be high. In accordance with our implementing regulations at 50 CFR 216.104(c), we use the best available scientific evidence to determine whether the taking by the specified activity within the specified geographic region will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses. Based on the scientific evidence available, NMFS determined that the impacts of the authorized take incidental to pile driving would result in a negligible impact and no unmitigable adverse impact on availability of marine mammals for subsistence uses.

Comment 17: CBD states that NMFS must prepare a programmatic environmental impact statement (EIS) for its CIBW take authorizations. They state that at a minimum, NMFS should analyze the PAMP in a single NEPA review that considers all cumulative,

indirect, and direct environmental effects.

Response: For clarity, NMFS' authorization does not ''approve activities''; that permitting responsibility lies with the United States Army Corps of Engineers (USACE). Rather, NMFS authorizes unintentional take of marine mammals incidental to specified activities. Therefore, under NEPA, NMFS must evaluate the impacts of our issuance of the ITA to the POA for the NES1 activities.

NMFS originally declared its intent to prepare an EIS for oil and gas activities in Cook Inlet, Alaska (79 FR 61616, October 14, 2014). However, in a 2017 **Federal Register** notice (82 FR 41939, September 5, 2017), NMFS indicated that due to a reduced number of ITA requests in the region, combined with funding constraints at that time, we were postponing any potential preparation of an EIS for oil and gas activities in Cook Inlet. As stated in the 2017 **Federal Register** notice, should the number of ITA requests, or anticipated requests, noticeably increase, NMFS will re-evaluate whether preparation of an EIS is necessary. Currently, the number of ITA requests for activities that may affect marine mammals in Cook Inlet is at such a level that preparation of an EIS is not yet necessary. Nonetheless, under NEPA, NMFS is required to consider cumulative effects of other potential activities in the same geographic area, and these are discussed in greater detail in the Final EA prepared for this issuance of an IHA to the POA for the NES1 project, which supports our finding that NMFS' issuance of the POA IHA will not have a significant impact on the human environment.

CBD assert that NMFS should analyze the PAMP in a single NEPA review and comment that ''[NMFS] has already segmented analysis of the [PCT] and [SFD] and, here, the NES1 construction''. NMFS has appropriately analyzed and captured all past, present and reasonably foreseeable future actions under NEPA. This includes the projects associated with the PAMP, which each have independent utility and require separate authorizations and NEPA analyses. The EAs for each PAMP activity appropriately analyze the cumulative, indirect, and direct environmental effects of each specified action. They include an evaluation of each action's affected area, the scale and geographic extent of each action, and the degree of cumulative effects on resources (including the duration of impact, and whether the impacts were adverse and/or beneficial and their magnitude) under NEPA.

CBD is correct that Federal agencies generally prepare an EIS for a major Federal action significantly affecting the quality of the human environment. While CBD acknowledges that significance is determined by considering the potential affected environment and the degree of the action (40 CFR 1501.3(b)), CBD argues that if this factor is met, then the agency must prepare an EIS. CBD further argues that, ''the impacts on an endangered species like the environmentally and culturally significant Cook Inlet beluga and its designated critical habitat is sufficient to trigger a full EIS.'' NMFS disagrees. NMFS can prepare an EA so long as the record supports the conclusion that potential impacts are not ''significant'' per 40 CFR 1501.3(b) for the purposes of NEPA. Based on the information presented in the application and NMFS' Policy and Procedures for Compliance with the NEPA and Related Authorities (Companion Manual (CM) for NOAA Administrative Order (NAO) 216–6A) (NOAA 2017), sections 3 and 7, NMFS' determination to prepare an EA is appropriate and in compliance with NEPA and 40 CFR 1501.3. NMFS appropriately signed a Finding of No Significant Impact (FONSI) for the issuance of the IHA for incidental take associated with the POA's NES1 project in support of this determination. The FONSI concluded that NMFS' proposed action, the issuance of an IHA to the POA, will not meaningfully contribute to significant impacts to specific resources, given the limited scope of NMFS' action and required mitigation measures. Accordingly, preparation of an EIS for this action is not necessary.

Comment 18: CBD believes the draft EA for the NES1 project fails to comply with the requirements of NEPA. They stipulate that the draft EA fails to consider a reasonable range of alternatives and lacks a meaningful environmental and cumulative impacts analysis.

Response: In accordance with the NEPA and the Council on Environmental Quality (CEQ) Regulations, NMFS is required to consider a reasonable range of alternatives to a Proposed Action, as well as a No Action Alternative. Reasonable alternatives are viable options for meeting the purpose and need for the proposed action. The evaluation of alternatives under NEPA assists NMFS with understanding, and as appropriate, minimizing impacts through an assessment of alternative ways to achieve the purpose and need for our Proposed Action. Reasonable alternatives are carried forward for detailed evaluation under NEPA while alternatives considered but determined not to meet the purpose and need are not carried forward. For the purposes of this EA, an alternative will only meet the purpose and need if it satisfies the requirements of section 101(a)(5)(D) of the MMPA.

In accordance with NOAA's implementing procedures, the CM for NAO 216–6A, Section 6.B.i, NMFS is defining the No Action alternative as not authorizing the requested incidental take of marine mammals under Section 101(a)(5)(D) of the MMPA. This is consistent with our statutory obligation under the MMPA to either: (1) Deny the requested authorization; or (2) grant the requested authorization and prescribe mitigation, monitoring, and reporting requirements. The Preferred Alternative (*i.e.,* issuance of the IHA) includes mandatory mitigation, monitoring, and reporting requirements for POA to achieve the MMPA standard of effecting the least practicable adverse impact on each species or stock of marine mammal and their habitat, paying particular attention to rookeries, mating grounds, and other areas of similar significance. Since NMFS is required to prescribe mitigation to effect the least practicable adverse impact on marine mammals, mitigation that reduces impacts on marine mammals is inherently included in Alternative 2 (the proposed action) and is included as part of the analysis of alternative(s) in the Environmental Consequences chapter in the EA. NMFS described both the No Action Alternative and Preferred Alternative in the EA. We have also included an ''Alternatives Considered but Eliminated from Further Consideration'' section in the final EA that considered whether other alternatives could meet the purpose and need while supporting this applicant's proposal to demolish the NES. There is no requirement under NEPA to consider more than two alternatives, or to consider alternatives that are substantially similar to other alternatives or which have substantially similar consequences. NMFS' range of alternatives is based on the proposed action and the purpose and need, which are linked to NMFS' authorities under the MMPA. For the purposes of analysis under NEPA in the EA, an alternative will only meet the purpose and need if it satisfies the requirements under section 101(a)(5)(D) of the MMPA. Therefore, NMFS determined that, based on our authorities and criteria under the MMPA, which included criteria regarding mitigation measures, appropriate considerations were applied

to identify which alternatives to carry forward for analysis.

CBD comments that the environmental and cumulative impacts section of the EA is not sufficient. CBD asserts that NMFS does not evaluate what the level of take will have on individual whales or the population, and fails to take into account any impact to CIBW pods. In addition, they state that NMFS does not include the most recent available information regarding the impacts of noise on marine mammals, and new information about CIBWs. In the draft EA, NMFS described both the general effects to marine mammals from exposure to noise (*e.g.,* pile driving) and scientific literature identifying responses of CIBWs to pile driving at the POA in Chapter 4 of the EA. This includes, as described in the **Federal Register** notice of proposed IHA (88 FR 76576, November 6, 2023) and in our response to *Comment 1,* data from several years of recent scientific monitoring at the POA during previous work involving pile driving (*e.g.,* Kendall and Cornick, 2016; 61N Environmental, 2021, 2022a, 2022b, 2022c; Easley-Appleyard and Leonard, 2022). In Chapter 3 of the EA we also describe anticipated impacts on marine mammal habitat and their prey. We believe these descriptions are sufficient with regard to the requirements of NEPA and the CEQ regulations.

NMFS disagrees that we did not include the most recent available information about noise on marine mammals or new information about CIBWs. As described above, the EA includes an analysis of CIBW observations directly in relation to in-water construction, including pile driving activities from 2020 through 2021 that took place at the POA (61N Environmental, 2021, 2022a, 2022b, 2022c; Easley-Appleyard and Leonard, 2022). Chapter 4 of the EA also includes an assessment on the impacts on marine mammals to noise that includes recent information on permanent and temporary threshold shifts, avoidance or abandonment behaviors, changes in vocalizations, and the masking of communication and foraging signals. The impacts of the NES1 project on marine mammals, including CIBWs, are expected to represent short-term, localized, negligible, adverse, direct impacts. For CIBWs, NMFS anticipates these impacts will manifest as whales moving more quickly and silently through the area, in more cohesive groups, but not by habitat abandonment or ceasing traveling through Knik Arm.

CBD also states that the draft EA fails to evaluate the cumulative impacts of other proposed projects and ongoing activities in Cook Inlet. In Chapter 4 of the draft EA, NMFS evaluated the cumulative impacts of the past, present, and reasonably foreseeable future actions in the action area, including projects associated with PAMP and the Alaska LNG project, which the CBD mentioned should be included, and research activities. These instances do not change NMFS' overall determination regarding the cumulative impacts of the NES1 project on marine mammals or marine mammal habitat. As stated in the draft EA, while consideration of activities in sum suggests an increase in industrialization of Cook Inlet, many of the past, present, and reasonably foreseeable future actions are spatially and temporally limited and do not permanently reduce or degrade the habitat available to marine mammals or their prey species. While the NES1 project would add an incremental contribution to the combined environmental impacts of other past, present, and reasonably foreseeable future actions; those direct and indirect adverse impacts are expected to be mainly short-term, localized, and minor, as described in the draft EA. None of the harassment authorized by NMFS in other ITAs would overlap in time or space with impacts from the NES1 Project.

The CBD postulates that NMFS' consideration of climate change is inadequate. However, CBD improperly states that the proposed project is for cement and petroleum. That is incorrect as the proposed project is for the demolition of portions of the failed NES sheet pile structure and reconfiguration and realignment of the shoreline within the North Extension. NMFS considers climate change in its EA. However, as mentioned above NMFS does not authorize any of the POA's activities but rather take of marine mammals incidental to the POA's activities. While changes in environmental conditions due to climate change could result in prey distribution changes or loss for beluga whales or other marine mammals, the NES1 project is planned to occur during a 1-year period, during which time the impacts of climate change on marine mammals are likely to remain at baseline levels.

Comment 19: CBD states that NMFS must comply with the ESA but asserts that NMFS should not issue take authorization under the ESA because such taking would jeopardize the continued existence of CIBWs.

Response: In the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), NMFS indicated that we requested section 7 consultation under the ESA. CBD indicates they believe the proposed taking would jeopardize the recovery and survival of CIBWs but did not further explain how they reached this conclusion. NMFS has fully complied with the ESA. NMFS Alaska Region issued a BiOp on December 15, 2023 concluding that issuance of take, by harassment, of CIBW, humpback whales (Mexico Distinct Population Segment (DPS) and Western DPS), and Steller sea lions would not jeopardize the continued existence of those stocks and the takings would not adversely modify critical habitat. The full analysis supporting these conclusions can be found in the BiOp (NMFS, 2023a).

Comment 20: In their letter, CBD stated they did not believe NMFS should authorize take of CIBWs and other marine mammals but, if NMFS did take action to do so, we must impose stringent mitigation measures to ensure the least practicable adverse impact on protected species.

Response: The proposed IHA included a suite of mitigation measures, which have been carried forward into the final IHA, which NMFS determined to effect the least practicable adverse impact on marine mammals, in accordance with the MMPA (see the Mitigation section).

Comment 21: A commenter from Eklutna, Inc. representing the indigenous Dena'ina people of the Anchorage, Alaska area requested that Dena'ina individuals from the local area be trained and employed as NMFS-approved PSOs. They stated that the Dena'ina people possess a deep-seated knowledge and understanding of the local marine ecosystem, particularly concerning the marine mammals that NMFS aims to protect through its monitoring efforts. Given the significance of these species to their way of life and the potential impacts of the NES1 project, the commenter proposed that members of their community be actively involved in the monitoring and support roles related to the project. They stressed that this initiative would not only ensure effective monitoring of marine mammals, but also foster a sense of ownership and participation among the indigenous community in the conservation efforts.

Response: NMFS agrees that Alaska Native residents with traditional knowledge about marine mammals and the local marine environment hold valuable knowledge and skills that are critical to the effectiveness of a PSO. In the final IHA, NMFS requires at least one PSO to have at least 1-year of prior experience performing the duties of a PSO during construction activity

pursuant to a NMFS-issued ITA or Letter of Concurrence. Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training for prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued ITA. For this project, in consideration of valuable traditional ecological knowledge that many community members hold, PSOs may also substitute relevant Alaska native traditional knowledge for experience. Regarding hiring preference for regional residents with traditional ecological knowledge, NMFS cannot require an IHA-holder to employ certain individuals, though it does require that an applicant request NMFS approval for all PSOs so that NMFS can confirm that they meet the requirements outlined in the IHA. NMFS has passed this recommendation on to the POA for its consideration and has suggested that the POA send letters to the Kenaitze, Tyonek, Knik, Eklutna, Ninilchik, Salamatof, and Chickaloon Tribes informing them of the hiring process when known.

Changes From the Proposed IHA to Final IHA

As a result of the public comments received from CBD and Eklutna, Inc. (and summarized above), provisions were added to the final IHA and this **Federal Register** notice of issuance that incorporates additional discussion regarding impacts to CIBW preferred prey, and our clarification of requirements related to PSO qualifications (*i.e.,* making clear that relevant Alaska native traditional knowledge can be considered as a substitute for relevant experience when considering prospective PSOs for the NES1 project).

Since the **Federal Register** notice of the proposed IHA was published (88 FR 76576, November 6, 2023), NMFS became aware of an error in the calculation of the RMS SPLs that were used as proxies for unattenuated vibratory pile removal of steel pipe piles for this project. NMFS has recalculated these levels and has revised the Estimated Take section accordingly. Specifically, the RMS SPL proxy for the vibratory removal of 24-inch (61-cm) piles changed from 168-dB to 169-dB. The RMS SPL for the vibratory removal of 36-inch (91-cm) piles did not change (*i.e.,* it remains 159-dB RMS). As a result of the change to the 24-inch (61-cm) RMS SPL, the Level B harassment zone for this activity increased from 5,967-m to 6,861-m, and the Level A harassment zones for low-frequency cetaceans, mid-frequency cetaceans, high-frequency cetaceans, and phocid pinniped increased slightly (*i.e.,* between 1-m to 7-m increases). Given the shutdown zone for CIBWs is equivalent to the Level B harassment zone (see the Mitigation section of this **Federal Register** notice of issuance), the shutdown zone for this activity has increased from 6,000-m to 6,900-m (6,861-m rounded up) for this species. The shutdown zone for low-frequency cetaceans also increased from 40-m to 50-m due to this change.

In the proposed IHA, NMFS proposed to require the POA to submit interim weekly and monthly monitoring reports (that include raw electronic data sheets) during the NES1 construction season. Since the **Federal Register** notice of the proposed IHA published (88 FR 76576, November 6, 2023), the POA has expressed concern that the inclusion of raw electronic data sheets with weekly and monthly reports will not be feasible for their monitoring program. In addition, the raw data will need to be reviewed and corrected for any errors. Rather, the POA has agreed to submit the final electronic data sheets with the final draft summary report. NMFS has accepted this request and has revised the final IHA to indicate that the final electronic data sheets must be submitted with the final draft summary report instead of with the required weekly and monthly monitoring reports. This is consistent with reporting requirements for the PCT and SFD IHAs.

Typographical errors identified in tables 2 and 13 in the **Federal Register** notice of the proposed IHA have been corrected in this **Federal Register** notice of issuance (see tables 1 and 10, respectively). In addition, some clarifying language regarding source levels proposed for impact pile removal and pile splitting has been added to the Estimated Take section. Lastly, in the Endangered Species Act section of the **Federal Register** notice of the proposed IHA, NMFS omitted reference to the Western North Pacific DPS of humpback whales as a listed species under the ESA for which NMFS OPR was requesting ESA section 7 consultation. However, this species was considered in the formal consultation and is assessed in the BiOp issued by the NMFS Alaska Regional Office on December 15, 2023. No other changes have been made from the proposed IHA to the final IHA.

Description of Marine Mammals in the Area of Specified Activities

There are seven species of marine mammals that may be found in upper Cook Inlet during the planned construction and demolition activities. Sections 3 and 4 of the IHA 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*).

Additional information on CIBWs may be found in NMFS' 2016 Recovery Plan for the CIBW, available online at *https://www.fisheries.noaa.gov/resource/document/recovery-plan-cook-inlet-beluga-whale-delphinapterus-leucas,* and NMFS' 2023 report on the abundance and trend of CIBWs in Cook Inlet in June 2021 and June 2022, available online at *https://www.fisheries.noaa.gov/resource/document/abundance-and-trend-belugas-delphinapterus-leucas-cook-inlet-alaska-june-2021-and.*

Table 2 lists all species or stocks for which take is expected and authorized for this activity, and summarizes information related to the population or stock, including regulatory status under the MMPA and 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 authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Alaska and Pacific SARs (*e.g.,* Carretta, *et al.,* 2023; Young *et al.,*

2023). Values presented in table 2 are the most recent available at the time of publication and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* The most recent abundance estimate for CIBWs, however, is available from Goetz *et al.* (2023) and available online at *https://www.fisheries.noaa.gov/feature-story/new-abundance-estimate-endangered-cook-inlet-beluga-whales.*

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Table 2 -- Species Likely Impacted by the Specified Activities

Common name	Scientific name	MMPA Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance N_{best}, (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray whale	*Eschrichtius robustus*	Eastern North Pacific	-/-; N	26,960 (0.05, 25,849, 2016)	801	131
Family Balaenopteridae (rorquals)						
Humpback whale	*Megaptera novaeangliae*	Hawaii	-, -, N	11,278 (0.56, 7,265, 2020)	127	27.09
		Mexico-North Pacific	T, D, Y	N/A (N/A, N/A, 2006)	UND[5]	0.57
Order Cetartiodactyla – Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Beluga whale	*Delphinapterus leucas*	Cook Inlet	E/D; Y	331 (0.076, 290, 2022)[4]	0.53	0
Killer whale	*Orcinus orca*	Eastern North Pacific Alaska Resident	-/-; N	1,920 (N/A, 1,920, 2019)	19	1.3

		Eastern North Pacific Gulf of Alaska, Aleutian Islands and Bering Sea Transient	-/-; N	587 (N/A, 587, 2012)	5.9	0.8
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Gulf of Alaska	-/-; Y	31,046 (0.214, N/A, 1998)	UND [5]	72
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	*Eumetopias jubatus*	Western	E/D; Y	52,932 (N/A, 52,932 2019)	318	255
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	Cook Inlet/ Shelikof Strait	-/-; N	28,411 (N/A, 26,907, 2018)	807	107

1 - 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.

2 - NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable (N.A.).

3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury (M/SI) 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.

4 - This abundance estimate is from Goetz *et al.* (2023).

5 - UND means undetermined.

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On June 15, 2023, NMFS released an updated abundance estimate for endangered CIBWs in Alaska (Goetz *et al.,* 2023) that incorporates aerial survey data from June 2021 and 2022, but which is not included in the most recent SAR (Young *et al.,* 2023). Data collected during NMFS recent aerial survey effort suggest that the whale population is stable or may be increasing slightly. Goetz *et al.* (2023) estimated that the population size is currently between 290 and 386, with a median best estimate of 331. In accordance with the MMPA, this population estimate will be incorporated into the next draft CIBW SAR, which will be reviewed by an independent panel of experts, the Alaska Scientific Review Group. After this review, the SAR will be made available as a draft for public review before being finalized. We have determined that it is appropriate to consider the CIBW estimate of abundance reported by Goetz *et al.* (2023) in our analysis rather than the older estimate currently available from the Alaska SAR (Young *et al.,* 2023) because it is based on the most recent and best available science.

As indicated above, all seven species (with nine managed stocks) in table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. Minke whales (*Balaenoptera acutorostrata*) and Dall's porpoises (*Phocoenoides dalli*) also occur in Cook Inlet; however, the 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. Data from the Alaska Marine Mammal Stranding Network database (NMFS, unpublished data) provide additional support for these determinations. From 2011 to 2020, only one minke whale and one Dall's porpoise were documented as stranded in the portion of Cook Inlet north of Point Possession. Both were dead upon discovery; it is unknown if they were alive upon their entry into upper Cook Inlet or drifted into the area with the tides. With very few exceptions, minke whales and Dall's porpoises do not occur in upper Cook Inlet, and therefore take of these species is considered unlikely.

In addition, sea otters (*Enhydra lutris*) may be found in Cook Inlet. However, sea otters are managed by the U.S. Fish and Wildlife Service (USFWS) and are not considered further in this document.

A detailed description of the species likely to be affected by the NES1 project, including a brief introduction to the affected stock as well as available information regarding population trends

and threats, and information regarding local occurrence, were provided in the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023). Since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.,* Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc.*). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65-dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in table 3. Specific to this action, gray whales and humpback whales are considered low-frequency (LF) cetaceans, CIBWs, and killer whales are considered mid-frequency (MF) cetaceans, harbor porpoises are considered high-frequency (HF) cetaceans, Steller sea lions are otariid pinnipeds, and harbor seals are phocid pinnipeds.

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Table 3 -- Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

* Represents the generalized hearing range for the entire group as a composite (*i.e.*, all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65-dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.*, 2007) and PW pinniped (approximation).

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The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth and Holt, 2013). This division between phocid and otariid pinnipeds is now reflected in the updated hearing groups proposed in Southall *et al.* (2019).

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

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

The effects of underwater noise from the POA's construction activities have the potential to result in harassment of marine mammals in the vicinity of the POA. The **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023) included a discussion of the

effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from the POA's construction activities on marine mammals and their habitat. That information and analysis is referenced in this notice of issuance of the final IHA and is not repeated here; please refer to the notice of the proposed IHA (88 FR 76576, November 6, 2023).

Estimated Take

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

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines ''harassment'' as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes will primarily be by Level B harassment, as use of the acoustic sources (*i.e.,* vibratory and impact pile driving) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for HF cetaceans and phocids because predicted auditory injury zones are larger than for MF cetaceans and otariids. Auditory injury is unlikely to occur for mysticetes, MF cetaceans, and otariids due to measures described in the Mitigation section. The 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 authorized for this activity. Below we describe how the take numbers were estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (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 take estimates.

Acoustic Thresholds

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

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 RMS SPL of 120-dB re 1 µPa for continuous (*e.g.,* vibratory pile driving, drilling) and above RMS SPL 160-dB re 1 µPa for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by temporary threshold shift (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 POA's planned activity includes the use of continuous (vibratory pile driving) and intermittent (impact pile driving) noise sources, and therefore the RMS SPL thresholds of 120- and 160-dB re 1 µPa are applicable.

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

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

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Table 4 -- Thresholds Identifying the Onset of Permanent Threshold Shift

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

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

Note: Peak sound pressure (L_{pk}) has a reference value of 1 µPa, and cumulative sound exposure level (L_E) has a reference value of 1µPa^{2}s. In this table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI, 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for NMFS' 2018 Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

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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 project area is the existing background noise plus additional construction noise from the planned project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* impact pile removal and vibratory pile installation and removal). Calculation of the area ensonified by the specified action is dependent on the background sound levels at the project site, the source levels of the planned activities, and the estimated transmission loss coefficients for the planned activities at the site. These factors are addressed in order, below.

Background Sound Levels at the Port of Alaska. As noted in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), the POA is an industrial facility in a location with high levels of commercial vessel traffic, port operations (including dredging), and extreme tidal flow. Previous measurements of background noise at the POA have recorded a background SPL of 122.2-dB RMS (Austin *et al.,* 2016). NMFS concurred that this SPL reasonably represents background noise near the project area, and therefore we have used 122.2-dB RMS as the threshold for Level B harassment (instead of 120-dB RMS).

Sound Source Levels of Specified Activities. The intensity of pile driving sounds is greatly influenced by factors such as the type of piles (material and diameter), hammer type, and the physical environment (*e.g.,* sediment type) in which the activity takes place. In order to calculate the distances to the Level A harassment and the Level B harassment sound thresholds for the methods and piles being used in this project, the POA used acoustic monitoring data from sound source verification studies to develop proxy source levels for the various pile types, sizes and methods (table 5). While site-specific sound source verification studies have been conducted at the POA, the vast majority of the measurements recorded in those studies were made when bubble curtains were deployed around the sound source, which act to attenuate sound levels (Austin *et al.,* 2016; I&R, 2021a, 2021b). Bubble curtains are not a feasible mitigation measure for the NES1 project due to the demolition and sequencing nature of the project (see the Mitigation section of this notice for additional discussion), and therefore the majority of the proxy values for this project are based on measurements recorded from locations other than the POA.

Underwater sound was measured in 2008 at the POA for the Marine Terminal Redevelopment Project (MTRP) during installation of sheet piles to assess potential impacts of sound on marine species. Sound levels for installation of sheet piles measured at 10-m typically ranged from 147- to 161-dB RMS, with a mean of approximately 155-dB RMS (James Reyff, unpublished data). An SPL of 162-dB RMS was reported in (California Department of Transportation (CALTRANS), 2020) summary tables for 24-inch (61-cm) steel sheet piles. This is a more rigid type of sheet pile that requires a large vibratory driver (James Reyff, personal communication, August 26, 2020). Based on the 2008 measurements at the POA and the CALTRANS data, a value of 160-dB RMS was assumed for vibratory removal of sheet piles.

NMFS concurred that the source levels proposed by the POA for all pile sizes during impact removal and vibratory installation of all pile types are appropriate to use for calculating harassment isopleths for the POA's planned NES1 activities (table 5). Impact removal is the process of hitting a pile with an impact hammer with a small number of strikes (up to 50 per pile) to loosen it from the soil so that it can be removed via other means such as direct pulling or with a vibratory hammer. There are no data to our knowledge available on impact removal of this nature. The POA proposed to use SPL values measured during the impact installation of 24-inch (61-cm) AZ steel sheet piles from the Berth 23, Port of Oakland Project (CALTRANS, 2020) for this activity. Given this is the best available information, NMFS has accepted the POA's proposed SPLs for this activity.

However, the source levels proposed by the POA for vibratory pile removal were based on limited data collected at the POA. Therefore, NMFS considered and evaluated all data related to unattenuated vibratory removal of 24-inch (61-cm) and 36-inch (91-cm) steel pipe piles available, including sound source verification data measured at the POA during the PCT project (Reyff *et al.,* 2021a) and elsewhere (*i.e.,* Coleman, 2011; U.S. Navy, 2012; I&R, 2017). NMFS gathered data from publicly available reports that reported driving conditions and specified vibratory removal for certain piles. If vibratory removal was not specifically noted for a given pile, we excluded that data from the analysis. Mean RMS SPLs reported by these studies were converted into pressure values, and pressure values for piles from each project were averaged to give a single SPL for each project. The calculated project means were then averaged and converted back into dBs to give a single recommended SPL (rounded to the nearest whole dB) for each pile type.

Ten measurements were available for unattenuated vibratory removal of 24-inch (61-cm) piles: 3 from Columbia River Crossing in Oregon (mean RMS SPL of 173-dB; Coleman, 2011), 5 from Joint Expeditionary Base Little Creek in Norfolk, Virginia (mean RMS SPL of 148-dB; I&R, 2017), and 2 from the PCT project at the POA (mean RMS SPL of 169-dB; I&R, 2021a, 2023). The calculated average SPL for unattenuated vibratory removal of 24-inch (61-cm) steel pipe piles from these studies was 169-dB RMS (table 5). Forty measurements were available for unattenuated vibratory removal of 36-inch (91-cm) piles: 38 from the U.S. Navy Test Pile Program at Naval Base Kitsap in Bangor, Washington (mean RMS SPL of 160-dB; U.S. Navy, 2012), and 2 from the PCT project at the POA (mean RMS SPL of 159-dB; I&R, 2021, 2023). The calculated average SPL for unattenuated vibratory removal of 36-inch (91-cm) steel pipe piles from these studies was 159-dB RMS (table 5). Note that the proxy values in table 5 represent SPL referenced at a distance of 10- m from the source.

Interestingly, the RMS SPLs for the unattenuated vibratory removal of 24-inch (61-cm) piles were much louder than the unattenuated vibratory removal of 36-inch (91-cm) piles, and even louder than the unattenuated vibratory installation of 24-inch piles. I&R (2023) suggest that at least for data recorded at the POA, the higher 24-inch (61-cm) removal levels are likely due to the piles being removed at rates of 1,600 to 1,700 revolutions per minute (rpm), while 36-inch (91-cm) piles, which are significantly heavier than 24-inch (61-cm) piles), were removed at a rate of 1,900 rpm. The slower rates combined with the lighter piles would cause the hammer to easily ''jerk'' or excite the 24-inch (61-cm) piles as they were extracted, resulting in a louder rattling sound and louder sound levels. This did not occur for the 36-inch (91-cm) piles, which were considerably heavier due to increased diameter, longer length, and greater thickness.

Table 5 -- Summary of Unattenuated In-Water Pile Driving Proxy Levels (at 10 m)

Pile Type	Installation or Removal	Peak SPL (re 1 μPa)	RMS SPL (re 1 μPa)	SEL[1] (re 1 μPa^2-sec)	Source
Impact driving					
Sheet pile	Removal	205	189	179	CALTRANS (2020)
Vibratory driving					
Sheet pile	Removal (hammer or splitter)	NA	160	NA	CALTRANS (2015, 2020)
24-inch (61-cm) steel pipe	Installation		161		U.S. Navy (2015)
	Removal		169		Coleman (2011), I&R (2017, 2021, 2023)
36-inch (91-cm steel pipe	Installation		166		U.S. Navy (2015)
	Removal		159		U.S. Navy (2012), I&R (2021, 2023)

[1]Sound Exposure Level

A splitter will be used in conjunction with a vibratory hammer to make vertical cuts in sheet piles as necessary to help with their removal. The POA assumes that a pile splitter will produce the same or similar sound levels as a vibratory hammer without the splitter attachment; therefore, the POA combined use of a vibratory hammer to remove sheet pile and use of a splitter into a single category (*i.e.,* vibratory hammer removal). NMFS is currently unaware of any hydroacoustic measurements of pile splitting with a vibratory hammer. NMFS specifically requested comments on the proposed SPL values for vibratory pile splitting in the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023). No additional data or recommendations for proxy SPLs for these activities were received during the public comment period. Given this is the best available information, NMFS has accepted the POA's proposed SPLs and assessments.

Transmission Loss. For unattenuated impact pile driving, the POA proposed to use 15 as the *TL* coefficient, meaning they assumed practical spreading loss (*i.e.,* the POA assumes $TL = 15*\text{Log}_{10}(\text{range})$); NMFS concurred with this value and has used the practical spreading loss model for impact driving in this analysis.

The *TL* coefficient that the POA proposed for unattenuated vibratory installation and removal of piles is 16.5 (*i.e.,* $TL = 16.5*\text{Log}_{10}(\text{range})$). This value is an average of measurements obtained from two 48-inch (122-cm) piles installed via an unattenuated vibratory hammer in 2016 (Austin *et al.,* 2016). To assess the appropriateness of this *TL* coefficient to be used for the NES1 project, NMFS examined and analyzed additional *TL* measurements recorded at the POA. This included a *TL* coefficient of 22 (deep hydrophone measurement) from the 2004 unattenuated vibratory installation of one 36-inch (91-cm) pile in Knik Arm (Blackwell, 2004), as well as *TL* coefficients ranging from 10.3 to 18.2 from the unattenuated vibratory removal of 24-inch (61 cm) and 36-inch (91-cm) piles and the unattenuated vibratory installation of one 48-inch (122-cm) pile at the POA in 2021 (I&R 2021, 2023). To account for statistical interdependence due to temporal correlations and equipment issues across projects, values were averaged first within each individual project, and then across projects. The mean and median value of the measured *TL* coefficients for unattenuated vibratory piles in Knik Arm by project were equal to 18.9 and 16.5, respectively. NMFS used the project median *TL* coefficient of 16.5 during unattenuated vibratory installation and removal of all piles during the NES1 project. This value is representative of all unattenuated vibratory measurements in the Knik Arm. Further, 16.5 is the mean of the 2016 measurements, which were made closer to the NES1 project area than other measurements and were composed of measurements from multiple directions (both north and south/southwest).

Estimated Harassment Isopleths. All estimated Level B harassment isopleths are reported in table 6. At POA, Level B harassment isopleths from the NES1 project will be limited by the coastline along Knik Arm along and across from the project site. The maximum predicted isopleth distance is 6,861-m during vibratory removal of 24-inch (61-cm) steel pipe piles.

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources such as pile driving, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be

expected to incur PTS. Inputs used in the User Spreadsheet are reported in table 6 and the resulting isopleths and ensonified areas are reported in table 7.

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Table 6 -- NMFS User Spreadsheet Inputs

	Impact Pile Driving	Vibratory Pile Driving				
	Sheet Pile	Sheet Pile	24-inch (61-cm) steel pipe		36-inch (91-cm) steel pipe	
	Removal	Removal	Installation	Removal	Installation	Removal
Spreadsheet Tab Used	E.1) Impact pile driving	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.
Source Level (SPL)	179 dB SEL	160 dB RMS	161 dB RMS	169 dB RMS	166 dB RMS	159 dB RMS
Transmission Loss Coefficient	15	16.5	16.5	16.5	16.5	16.5
Weighting Factor Adjustment (kHz)	2	2.5	2.5	2.5	2.5	2.5
Time to install / remove single pile (minutes)	--	5	15	15	15	15
Number of strikes per pile	50	--	--	--	--	--
Piles per day	3	24	12	12	12	12
Distance of sound pressure level measurement (m)	10	10	10	10	10	10

Table 7 -- Calculated Distance and Areas of Level A and Level B Harassment Per Pile Type and Pile Driving Method

Activity	Pile Type / Size	Level A harassment distance (m)					Level B harassment distance (m) all hearing groups	Level B harassment area (km^2) all hearing groups
		LF	MF	HF	PW	OW		
Impact Removal	Sheet pile	153	6	182	82	6	858	1.44
Vibratory Installation	24-inch (61-cm)	14	2	20	9	1	2,247	8.39
	36-inch (91-cm)	28	4	40	18	2	4,514	26.13
Vibratory or Splitter Removal	Sheet pile	10	1	14	6	1	1,954	6.47
Vibratory Removal	24-inch (61-cm)	42	5	60	27	3	6,861	37.64
	36-inch (91-cm)	11	2	15	7	1	1,700	4.99

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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 informed the take calculation. We also describe how the information provided above was synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and is authorized.

Gray Whale

Sightings of gray whales in the project area are rare. Few, if any, gray whales are expected to approach the project area. However, based on three separate sightings of single gray whales near the POA in 2020 and 2021 (61N Environmental, 2021, 2022a; Easley-Appleyard and Leonard, 2022), the POA anticipates that up to six individuals could be within estimated harassment zones during NES1 project activities. Therefore, NMFS authorized six takes by Level B harassment for gray whales during the NES1 project. Take by Level A harassment is not anticipated or authorized. The Level A harassment zones (table 7) are smaller than the required shutdown zones (see the Mitigation section). It is unlikely that a gray whale will enter and remain within the Level A harassment zone long enough to incur PTS.

Humpback Whale

Sightings of humpback whales in the project area are rare, and few, if any, humpback whales are expected to approach the project area. However, there have been a few observations of humpback whales near the POA as described in the Description of Marine Mammals in the Area of Specified Activities section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023). Based on the two sightings in 2017 of what was likely a single individual at the Anchorage Public Boat Dock at Ship Creek (ABR, Inc., 2017) south of the project area, the POA requested authorization of six takes of humpback whales. However, given the maximum number of humpback whales observed within a single construction season was two (in 2017), NMFS instead anticipates that only up to four humpback whales could be exposed to project-related underwater noise during the NES1 project. Therefore, NMFS authorized four takes by Level B harassment for humpback whales during the NES1 project. Take by Level A harassment is not anticipated or authorized. The Level A harassment zones (table 7) are smaller than the required shutdown zones (see the Mitigation section), therefore, it is unlikely that a humpback whale will enter and remain within the Level A harassment zone long enough to incur PTS.

Killer Whale

Few, if any, killer whales are expected to approach the NES1 project area. No killer whales were sighted during previous monitoring programs for POA construction projects, including the 2016 TPP, 2020 PCT, and 2022 SFD projects (Prevel-Ramos *et al.,* 2006; Markowitz and McGuire, 2007; Cornick and Saxon-Kendall, 2008, 2009; Cornick *et al.,* 2010, 2011; ICRC, 2009, 2010, 2011, 2012; Cornick and Pinney, 2011; Cornick and Seagars, 2016; 61N Environmental, 2021, 2022b), until PCT construction in 2021, when two killer whales were sighted (61N Environmental, 2022a). Previous sightings of transient killer whales have documented pod sizes in upper Cook Inlet between one and six individuals (Shelden *et al.,* 2003). Therefore, the POA conservatively estimated that no more than one small pod (assumed to be six individuals) could be within estimated harassment zones during NES1 project activities.

Take by Level A harassment is not anticipated or authorized due to the implementation of shutdown zones, which will be larger than the Level A harassment zones (described below in the Mitigation section), and the low likelihood that killer whales will approach this distance for sufficient duration to incur PTS. Therefore, NMFS authorized six takes by Level B harassment for killer whales.

Harbor Porpoise

Monitoring data recorded from 2005 through 2022 were used to evaluate hourly sighting rates for harbor porpoises in the NES1 project area (see table 4–3 in the POA's application). During most years of monitoring, no harbor porpoises were observed. However, there has been an increase in harbor porpoise sightings in upper Cook Inlet in recent decades (*e.g.,* 61N Environmental, 2021, 2022a; Shelden *et al.,* 2014). The highest sighting rate for any recorded year during in-water pile installation and removal was an average of 0.037 harbor porpoises per hour during PCT construction in 2021, when observations occurred across most months. Given the uncertainty around harbor porpoise occurrence at the POA and potential that occurrence is increasing, it is estimated that approximately 0.07 harbor porpoises per hour (the 2021 rate of 0.037 harbor porpoises per hour doubled) may be observed near the NES1 project area per hour of hammer use. With 246.5 hours of in-water pile installation and removal, the POA estimated that there could be 18 instances where harbor porpoises (0.07 harbor porpoises per hour * 246.5 hours = 17.3 harbor porpoises rounded up to 18 harbor porpoises) could be within estimated harassment zones during NES1 project activities.

Harbor porpoises are small, lack a visible blow, have low dorsal fins, an overall low profile, and a short surfacing time, making them difficult to observe (Dahlheim *et al.,* 2015). To account for the possibility that a harbor porpoise could enter a Level A harassment zone and remain there for sufficient duration to incur PTS before activities were shut down, the POA assumed that 5 percent of estimated harbor porpoise takes (1 take of harbor porpoise; 5 percent of 18 = 0.9, rounded up to 1) could be taken by Level A harassment. In its request, the POA rounded this estimate up to two to account for the average group size of this species, However, NMFS has determined such adjustments are generally unnecessary for purposes of estimating potential incidents of Level A harassment and did not concur with the request. At relatively close distances, NMFS believes it unlikely that groups will necessarily adhere to each other for sufficient duration for the entire group to incur PTS. While it is unlikely that a harbor porpoise could enter a Level A harassment zone for sufficient duration to incur PTS given the required shutdown measures (see the Mitigation section for more information) and potential for avoidance behavior, this species moves quickly and can be difficult to detect and track, therefore, NMFS authorized 1 take by Level A harassment and 17 takes by Level B harassment for harbor porpoises, for a total of 18 instances of take.

Steller Sea Lion

Steller sea lions are anticipated to occur in low numbers within the NES1 project area as summarized in the Description of Marine Mammals in the Area of Specified Activities section of the **Federal Register** of the proposed IHA (88 FR 76576, November 6, 2023). Similar to the approach used above for harbor porpoises, the POA used previously recorded sighting rates of Steller sea lions near the POA to estimate requested take for this species. During SFD construction in May and June of 2022, the hourly sighting rate for Steller sea lions was 0.028. The hourly sighting rate for Steller sea lions in 2021, the most recent year with observations across most months, was approximately 0.01. Given the uncertainty around Steller sea lion occurrence at the POA and potential that occurrence is increasing, the POA estimated that approximately 0.06 Steller sea lions per hour (the May and June 2022 rate of 0.028 Steller sea lions per hour doubled) may be observed near the NES1 project areas per hour of hammer use. With 246.5 hours of in-water pile installation and removal, the POA estimates that 15 Steller sea lions (0.06 sea lions per hour * 246.5 hours = 14.79 sea lions rounded up to 15) could be within estimated harassment zones during NES1 project activities. However, the highest number of Steller sea lions that have been observed during the 2020–2022 monitoring efforts at the POA was nine individuals (eight during PCT Phase 1 monitoring and one during NMFS 2021 monitoring). Given the POA's estimate assumes a higher Steller sea lion sighting rate (0.06) than has been observed at the POA and results in an estimate that is much larger than the number of Steller sea lions observed in a year, NMFS believed that the 15 estimated takes requested by the POA overestimated potential exposures of this species. NMFS instead authorized nine takes by Level B harassment for Steller sea lions during the NES1 project.

The largest Level A harassment zone for Steller sea lions is 6-m. While it is unlikely that a Steller sea lion will enter a Level A harassment zone for sufficient duration to incur PTS, the POA is aware of a Steller sea lion that popped up next to a work skiff during the TPP in 2016, which was documented as a potential take by Level A harassment by the PSOs on duty at the time. Pile driving, however, was not occurring at the time the event was recorded and a brief observation of an animal within a Level A harassment zone does not necessarily mean the animal experienced Level A harassment (other factors such as duration within the harassment zone need to be taken into consideration). However, as a result of the aforementioned event, the POA requested authorization of an additional two takes of Steller sea lions by Level A harassment. Given the small Level A harassment zone (6-m), and shutdown zones of ≥ 10-m (see the Mitigation section), NMFS believes that it is unlikely that a Steller sea lion will be within the Level A harassment zone for sufficient duration to incur PTS. Therefore, NMFS did not authorize take by Level A harassment for Steller sea lions. Rather, all nine estimated takes are authorized as Level B harassment.

Harbor Seal

No known harbor seal haulout or pupping sites occur in the vicinity of the POA. In addition, harbor seals are not known to reside in the NES1 project area, but they are seen regularly near the mouth of Ship Creek when salmon are running, from July through September. With the exception of newborn pups, all ages and sexes of harbor seals may occur in the NES1 project area. Any harassment of harbor seals during in-water pile installation and removal will involve a limited number of individuals that may potentially swim through the NES1 project area or linger near Ship Creek.

The POA evaluated marine mammal monitoring data to calculate hourly sighting rates for harbor seals in the NES1 project area (see table 4–1 in the POA's application). Of the 524 harbor seal sightings in 2020 and 2021, 93.7 percent of the sightings were of single individuals; only 5.7 percent of sightings were of 2 individual harbor seals, and only 0.6 percent of sightings reported 3 harbor seals. Sighting rates of harbor seals were highly variable and appeared to have increased during monitoring between 2005 and 2022. It is unknown whether any potential increase was due to local population increases or habituation to ongoing construction activities. The highest individual hourly sighting rate recorded for a previous year was used to quantify take of harbor seals for in-water pile installation and removal associated with NES1. This occurred in 2021 during PCT Phase 2 construction, when harbor seals were observed from May through September. A total of 220 harbor seal

sightings were observed over 734.9 hours of monitoring, at an average rate of 0.30 harbor seal sightings per hour. The maximum monthly sighting rate occurred in September 2020 and was 0.51 harbor seal sightings per hour. Based on these data, the POA estimated that approximately one harbor seal (the maximum monthly sighting rate (0.51) rounded up) may be observed near the NES1 project per hour of hammer use. This approximate sighting rate of one harbor seal per hour was also used to calculate potential exposures of harbor seals for the SFD project (86 FR 50057, September 7, 2021). Therefore, the POA estimated that during the 246.5 hours of anticipated in-water pile installation and removal, up to 247 harbor seals (1 harbor seal per hour * 246.5 hours = 246.5 harbor seals, rounded up to 247) could be within estimated harassment zones.

Harbor seals often appear curious about onshore activities and may approach closely. The mouth of Ship Creek, where harbor seals linger, is about 2,500-m from the southern end of the NES1 and is therefore outside of the Level A harassment zones calculated for harbor seals (table 7). However, given the potential difficulty of tracking individual harbor seals along the face of the NES1 site and their consistent low-level use of the POA area, NMFS anticipates the potential for some take by Level A harassment for harbor seals. For the SFD project, NMFS authorized 8.6 percent of estimated harbor seal takes as potential Level A harassment based on the proportion of previous harbor seal sightings within the estimated Level A harassment zones for that project (86 FR 50057, September 7, 2021), but the NES1 Project is more distant from Ship Creek than SFD. NMFS therefore anticipated that a smaller proportion of takes by Level A harassment may occur during the NES1 project, and reduced this percentage to 5 percent. Therefore, NMFS authorized 13 harbor seal takes (5 percent of 247 exposures) by Level A harassment and 234 takes (247 exposures minus 13) by Level B harassment, for a total of 247 takes.

Beluga Whale

For the POA's PCT and SFD projects, NMFS used a sighting rate methodology to calculate potential exposure (equated to take) of CIBWs to sound levels above harassment criteria produced by the POA's construction activities (85 FR 19294, April 6, 2020; 86 FR 50057, September 7, 2021, respectively). For the PCT project, NMFS used data collected during marine mammal observations from 2005 to 2009 (Kendall and Cornick, 2015) and the total number of monthly observation hours during these efforts to derive hourly sighting rates of CIBWs per month of observation (April through November) (85 FR 19294, April 6, 2020). For the SFD project, observation data from 2020 PCT construction were also incorporated into the analysis (86 FR 50057, September 7, 2021; 61N Environmental, 2021).

The marine mammal monitoring programs for the PCT and SFD projects produced a unique and comprehensive data set of CIBW locations and movements (table 8; 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022) that is the most current data set available for Knik Arm. During the PCT and SFD projects, the POA's marine mammal monitoring programs included 11 PSOs working from 4 elevated, specially designed monitoring stations located along a 9-km stretch of coastline surrounding the POA. The number of days data was collected varied among years and project, with 128 days during PCT Phase 1 in 2020, 74 days during PCT Phase 2 in 2021, and 13 days during SFD in 2022 (see table 6–7 in the POA's application for additional information regarding CIBW monitoring data). PSOs during these projects used 25-power ''big-eye'' and hand-held binoculars to detect and identify marine mammals, and theodolites to track movements of CIBW groups over time and collect location data while they remained in view.

These POA monitoring programs were supplemented in 2021 with a NMFS-funded visual marine mammal monitoring project that collected data during non-pile driving days during PCT Phase 2 (table 8; Easley-Appleyard and Leonard, 2022). NMFS replicated the POA monitoring efforts, as feasible, including use of 2 of the POA's monitoring platforms, equipment (Big Eye binoculars, theodolite, 7x50 reticle binoculars), data collection software, monitoring and data collection protocol, and observers; however, the NMFS-funded program utilized only 4 PSOs and 2 observation stations along with shorter (4- to 8-hour) observation periods compared to PCT or SFD data collection, which included 11 PSOs, 4 observation stations, and most observation days lasting close to 10 hours. Despite the differences in effort, the NMFS dataset fills in gaps during the 2021 season when CIBW presence began to increase from low presence in July and is thus valuable in this analysis. NMFS' PSO's monitored for 231.6 hours on 47 non-consecutive days in July, August, September, and October.

Distances from CIBW sightings to the project site from the POA and NMFS-funded monitoring programs ranged from less than 10-m up to nearly 15-km during these monitoring programs. These robust marine mammal monitoring programs in place from 2020 through 2022 located, identified, and tracked CIBWs at greater distances from the NES1 project site than previous monitoring programs (*i.e.,* Kendall and Cornick, 2015), and contributed to a better understanding of CIBW movements in upper Cook Inlet (*e.g.,* Easley-Appleyard and Leonard, 2022).

Given the evolution of the best available data of CIBW presence in upper Cook Inlet, particularly regarding the distances at which CIBWs were being observed and documented (which increased during the PCT and SFD compared to earlier monitoring efforts), the POA proposed, and NMFS concurred, that the original sighting rate methodology used for the PCT and SFD projects was no longer the best approach for calculating potential take of CIBWs for the NES1 project. The recent and comprehensive data set of CIBW locations and movements from the PCT and SFD projects (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022) provided the opportunity for refinement of the previously used sighting rate methodology with updated data. Data for 2020, 2021, and 2022 were selected for the updated sighting rate analysis for the NES1 project because they are the most current data available and are therefore most likely to accurately represent future CIBW occurrence at the project site, which may be affected by CIBW population size, CIBW movement patterns through Knik Arm, environmental change (including climate change), differences in salmon and other prey abundance among years, and other factors (table 8). The data from 2005 to 2009 (Kendall and Cornick, 2015), which were used by NMFS for the sighting rate analyses for the PCT and SFD IHAs, were not included in this analysis due to the changes in observation programs and age of the data collected. Monitoring data from the 2016 TPP (Cornick and Seagars, 2016) were also not included in the analysis because of limited hours observed, limited seasonal coverage, and differences in the observation programs.

Table 8 -- Marine Mammal Monitoring Data Used for CIBW Sighting Rate Calculations

Year	Monitoring Type and Data Source	Number of CIBW group fixes	Number of CIBW groups	Number of CIBWs
2020	PCT: POA Construction Monitoring 61N Environmental, 2021	2,653	245	987
2021	PCT: NMFS Monitoring Easley-Appleyard and Leonard, 2022	694	109[1]	575
2021	PCT: POA Construction Monitoring 61N Environmental, 2021, 2022a	1,339	132	517
2022	SFD: POA Construction Monitoring 61N Environmental, 2022b	151	9	41

[1] This number differs slightly from table 6-8 in the POA's application due to our removal of a few duplicate data points in the NMFS data set.

The sighting rate methodology used for the PCT (85 FR 19294, April 6, 2020) and SFD (86 FR 50057, September 7, 2021) projects used observations of CIBWs recorded in Knik Arm, regardless of observation distance to the POA, to produce a single monthly sighting rate that was then used to calculate potential CIBW take for all activities, regardless of the size of the ensonified areas for the project activities (*i.e.,* take was calculated solely based on the monthly sighting rates and the estimated hours of planned activities, and did not consider the estimated sizes of the ensonified areas). This method may have overestimated potential CIBW takes when harassment zones were small because distant CIBWs will have been included in the sighting rate. This method also resulted in takes estimates that were identical for installation and removal of all pile sizes, regardless of pile driving method used (*e.g.,* vibratory, impact) or implementation of attenuation systems, since the calculation did not consider the size of the ensonified areas.

NMFS and the POA collaboratively developed a new sighting rate methodology for the NES1 project that incorporated a spatial component for CIBW observations, which allows for more accurate estimation of potential take of CIBWs for this project. NMFS proposes to use this approach to estimate potential takes of CIBW for authorization. During the POA's and NMFS' marine mammal monitoring programs for the PCT and SFD projects, PSOs had an increased ability to detect, identify, and track CIBWs groups at greater distances from the project work site when compared with previous years because of the POA's expanded monitoring program as described above. This meant that observations of CIBWs in the 2020–2022 dataset (table 8) include sightings of individuals at distances far outside the ensonified areas estimated for the NES1 project (table 7). Therefore, it is not appropriate to group all CIBW observations from these datasets into a single sighting rate as was done for the PCT and SFD projects. Rather, CIBW observations should be considered in relation to their distance to the NES1 project site when determining appropriate sighting rates to use when estimating take for this project. This helps to ensure that the sighting rates used to estimate take are representative of CIBW presence in the NES1 ensonified areas.

To incorporate a spatial component into the sighting rate methodology, the POA calculated each CIBW group's closest point of approach (CPOA) relative to the NES1 project site. The 2020–2022 marine mammal monitoring programs (table 8) enabled the collection, in many cases, of multiple locations of CIBW groups as they transited through Knik Arm, which allowed for track lines to be interpolated for many groups. The POA used these track lines, or single recorded locations in instances where only one sighting location was available, to calculate each group's CPOA. CPOAs were calculated in ArcGIS software using the Global Positioning System (GPS) coordinates provided for documented sightings of each group (for details on data collection methods, see 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022) and the NES1 location midpoint, centered on the project site. A CIBW group was defined as a sighting of one or more CIBWs as determined during data collection. The most distant CPOA location to NES1 was 11,057-m and the closest CPOA location was 15-m.

The cumulative density distribution of CPOA values represents the percentage of CIBW observations that were within various distances to the NES1 action site (figure 1). This distribution shows how CIBW observations differed with distances to the NES1 site and was used to infer appropriate distances within which to estimate spatially-derived CIBW sighting rates (figure 1). The POA

implemented a piecewise regression model that detected breakpoints (*i.e.,* points within the CPOA data at which statistical properties of the sequence of observational distances changed) in the cumulative density distribution of the CPOA locations, which they proposed to represent spatially-based sighting rate bins for use in calculating CIBW sighting rates. The POA used the ''Segmented'' package (Muggeo, 2020) in the R Statistical Software Package (R Core Team, 2022) to determine statistically significant breakpoints in the linear distances of the CIBW data using this regression method (see section 6.5.5.3 of the POA's application for more details regarding this statistical analysis). This analysis identified breakpoints in the CPOA locations at 74-, 1,651-, 2,808-, and 7,368-m (figure 1).

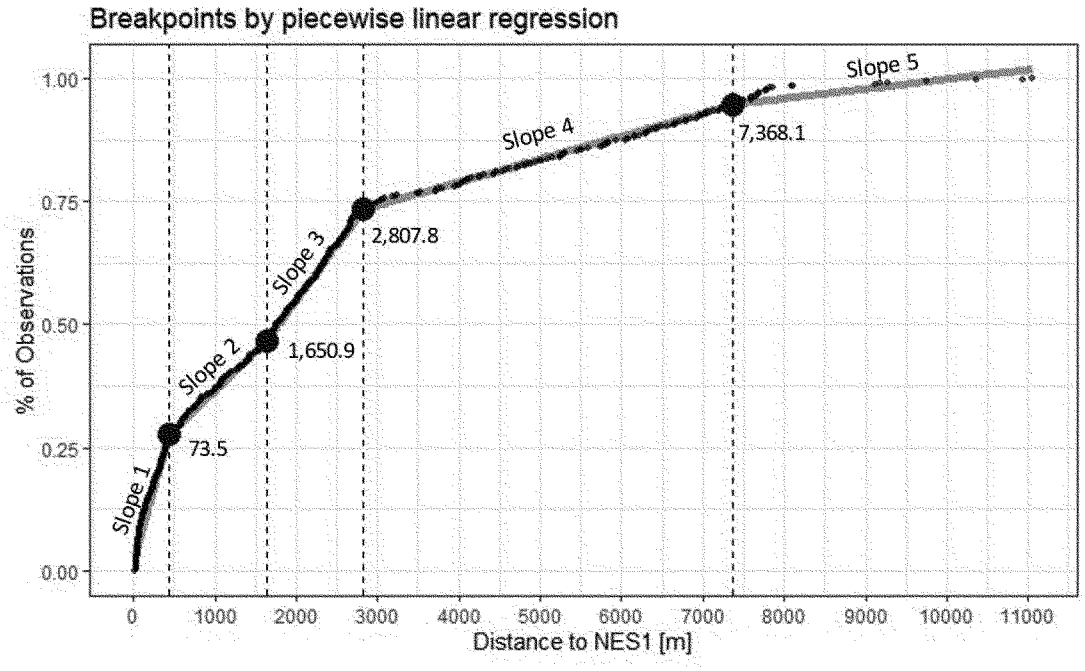

Figure 1 -- Percent of CIBW CPOA Observations in Relation to Distance from the NES1 Project Site and Associated Breakpoints Determined by Piecewise Linear Regression

Piecewise regression is a common tool for modeling ecological thresholds (Lopez *et al.,* 2020; Whitehead *et al.,* 2016; Atwood *et al.,* 2016). In a similar scenario to the one outlined above, Mayette *et al.* (2022) used piecewise regression methods to model the distances between two individual CIBWs in a group in a nearshore and a far shore environment. For the POA's analysis, the breakpoints (*i.e.,* 74-, 1,651-, 2,808-, and 7,368-m) detect a change in the frequency of CIBW groups sighted and the slope of the line between two points indicates the magnitude of change. A greater positive slope indicates a greater accumulation of sightings over the linear distance (x-axis) between the defining breakpoints, whereas a more level slope (*i.e.,* closer to zero) indicates a lower accumulation of sightings over that linear distance (x-axis) between those defining breakpoints (figure 1; see table 6–8 in the POA's application for the slope estimates for the empirical cumulative distribution function).

The breakpoints identified by the piecewise regression analysis are in agreement with what is known about CIBW behavior in Knik Arm based on recent monitoring efforts (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022). Observation location data collected during POA monitoring programs indicate that CIBWs were consistently found in higher numbers in the nearshore areas, along both shorelines, and were found in lower numbers in the center of the Arm. Tracklines of CIBW group movements collected from 2020 to 2022 show that CIBWs displayed a variety of movement patterns that included swimming close to shore past the POA on the east side of Knik Arm (defined by breakpoint 1 at 74-m), with fewer CIBWs swimming in the center of Knik Arm (breakpoints 1 to 2, at 74- to 1,651-m). CIBWs commonly swam past the POA close to shore on the west side of Knik Arm, with no CIBWs able to swim farther from the POA in that area than the far shore (breakpoints 2 to 3, at 1,651- to 2,808-m). Behaviors and locations beyond breakpoint 4 (7,368-m) include swimming past the mouth of Knik Arm between the Susitna River area and Turnagain Arm; milling at the mouth of Knik Arm but not entering the Arm; and milling to the northwest of the POA without exiting Knik Arm. The shallowness of slope 5, at distances greater than 7,368-m, could be due to detection falloff from a proximity (distance) bias, which occurs when PSOs are less likely to detect CIBW groups that are farther away than groups that are closer.

The POA, in collaboration with NMFS, used the distances detected by the breakpoint analysis to define five sighting rate distance bins for CIBWs in the NES1 project area. Each breakpoint (74-, 1,651-, 2,808-, and 7,368-m, and the complete data set of observations [>7,368-m]) was rounded to the nearest meter and considered the outermost limit of each sighting rate bin, resulting in five identified bins (table 9). All CIBW observations less than or equal to

each bin's breakpoint distance were used to calculated that bin's respective monthly sighting rates (*e.g.,* all sightings from 0- to 74-m are included in the sighting rates calculated for bin number 1, all sightings from 0 to 1,651-m are included in the sighting rates calculated for bin number 2, and so on). NES1 construction is anticipated to take place from April through November 2024, therefore monthly sighting rates were only derived for these months (table 9).

Table 9 -- CIBW Monthly Sighting Rates for Different Spatially-Based Bin Sizes

		CIBW/Hour[1]							
Bin Number	Distance (m)	April	May	June	July	August	September	October	November
1	≤ 74	0.09	0.06	0.10	0.04	0.83	0.62	0.51	0.11
2	≤ 1,651	0.25	0.14	0.13	0.06	1.43	1.32	1.15	0.70
3	≤ 2,808	0.36	0.22	0.21	0.07	2.08	1.90	2.04	0.73
4	≤ 7,368	0.67	0.33	0.29	0.13	2.25	2.19	2.42	0.73
5	> 7,368	0.71	0.39	0.30	0.13	2.29	2.23	2.56	0.73

[1] Observation hours have been totaled from the PCT 2020 and 2021 programs, the NMFS 2021 data collection effort, and the SFD 2022 program (61N Environmental 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022).

Potential exposures (equated with takes) of CIBWs were calculated by multiplying the total number of vibratory installation or removal hours per month for each sized/shaped pile based on the anticipated construction schedule (table 1) with the corresponding sighting rate month and sighting rate distance bin (table 10). For example, the Level B harassment isopleth distance for the vibratory installation of 24-inch (61-cm) piles is 2,245-m, which falls within bin number 3 (table 9). Therefore, take for this activity was calculated by multiplying the total number of hours estimated each month to install 24-inch (61-cm) piles via a vibratory hammer by the monthly CIBW sighting rates calculated for bin number 3 (table 10). The resulting estimated CIBW exposures were totaled for all activities in each month (table 11).

In their calculation of CIBW take, the POA assumed that only 24-inch (61-cm) template piles will be installed (rather than 36-inch (91-cm)) and removed during the project. If 36-inch (91-cm) piles are used for temporary stability template piles, it is assumed that the potential impacts of this alternate construction scenario and method on marine mammals are fungible (*i.e.,* that potential impacts of installation and removal of 36-inch (91-cm) steel pipe piles will be similar to the potential impacts of installation and removal of 24-inch (61-cm) steel pipe piles based on the estimated ensonified areas and relevant sighting rate bins). Using the monthly activity estimates in hours (table 1) and monthly calculated sighting rates (CIBWs/hour) for the spatially derived distance bins (table 10), the POA estimated that there could be up to 122 (121.1 rounded up to 122) instances of CIBW take where during the NES1 project (table 11).

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Table 10 -- Allocation of Each Level B Harassment Isopleth to a Sighting Rate Bin and CIBW Monthly Sighting Rates for Different Pile Sizes and Hammer Types

	Level B Harassment Isopleth Distance (m)	Sighting Rate Bin Number and Distance	CIBWs/Hour							
			April	May	June	July	August	September	October	November
24-inch Vibratory Installation	2,247	3 (2,808 m)	0.36	0.22	0.21	0.07	2.08	1.90	2.04	0.73
24-inch Vibratory Removal	6,861	4 (7,368 m)	0.67	0.33	0.29	0.13	2.25	2.19	2.42	0.73
36-inch Vibratory Installation	4,514	4 (7,368 m)	0.67	0.33	0.29	0.13	2.25	2.19	2.42	0.73
36-inch Vibratory Removal	1,699	3 (2,808 m)	0.36	0.22	0.21	0.07	2.08	1.90	2.04	0.73
Sheet Pile Vibratory Removal	1,954	3 (2,808 m)	0.36	0.22	0.21	0.07	2.08	1.90	2.04	0.73
Observation Hours/Month[1]:			87.9	615.1	571.6	246.9	224.5	326.2	109.5	132.0

[1] Observation hours have been totaled from the PCT 2020 and 2021 programs, the NMFS 2021 data collection effort, and the SFD 2022 program (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022).

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For the PCT (85 FR 19294, April 6, 2020) and SFD (86 FR 50057, September 7, 2021) projects, NMFS accounted for the implementation of mitigation measures (*e.g.*, shutdown procedures implemented when CIBWs entered or approached the estimated Level B harassment zone) by applying an

adjustment factor to CIBW take estimates. This was based on the assumption that some Level B harassment takes will likely be avoided based on required shutdowns for CIBWs at the Level B harassment zones (see the Mitigation section of those notices for more information). For the PCT project, NMFS compared the number of realized takes at the POA to the number of authorized takes for previous projects from 2008 to 2017 and found the percentage of realized takes ranged from 12 to 59 percent with an average of 36 percent (85 FR 19294, April 6, 2020). NMFS then applied the highest percentage of previous realized takes (59 percent during the 2009–2010 season) to ensure potential takes of CIBWs were fully evaluated. In doing so, NMFS assumed that approximately 59 percent of the takes calculated would be realized during PCT and SFD construction (85 FR 19294, April 6, 2020; 86 FR 50057, September 7, 2021) and that 41 percent of the calculated CIBW Level B harassment takes would be avoided by successful implementation of required mitigation measures.

The POA calculated the adjustment for successful implementation of mitigation measures for NES1 using the percentage of realized takes for the PCT project (see table 6–12 in the POA's application). The recent data from PCT Phase 1 and PCT Phase 2 most accurately reflected the current marine mammal monitoring program, the current program's effectiveness, and CIBW occurrence in the NES1 project area. Between the 2 phases of the PCT project, 90 total Level B harassment takes were authorized and 53 were potentially realized (*i.e.,* number of CIBWs observed within estimated Level B harassment zones), equating to an overall percentage of 59 percent. The SFD Project, during which only 7 percent of authorized take was potentially realized, represented installation of only 12 piles during a limited time period and does not represent the much higher number of piles and longer construction season anticipated for NES1.

NMFS has determined that the 59-percent adjustment accurately accounts for the efficacy of the POA's marine mammal monitoring program and required shutdown protocols. NMFS therefore assumes that approximately 59 percent of the takes calculated for NES1 may actually be realized. This adjusts the potential takes by Level B harassment of CIBWs authorized from 122 to 72 (table 11). Take by Level A harassment is not anticipated or authorized because the POA will be required to shutdown activities when CIBWs approach and or enter the Level B harassment zone (see the Mitigation section for more information).

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Table 11 -- Estimated Monthly CIBW Level B Harassment Exposures

	April	May	June	July	August	September	October	November	Total
24-inch Vibratory Installation and Removal	2.4	3.0	1.7	0.6	12.5	6.9	4.0	0.2	31.3
Sheet Pile Removal	3.6	9.9	12.6	4.2	27.0	22.8	8.2	1.5	89.8
Total Estimated Level B Harassment Exposures for All Activities:									121.1
Total Estimated Level B Harassment Exposures with 59% Correction Factor (Rounded):									72

In summary, the total amount of Level A harassment and Level B harassment authorized for each marine mammal stock is presented in table 12.

Table 12 -- Amount of Take Authorized as a Percentage of Stock Abundance, by Stock and Harassment Type

	Authorized Take				
Species	Level A	Level B	Total	Stock	Percent of Stock
Gray whale	0	6	6	Eastern North Pacific	0.02
Humpback whale	0	4	4	Hawai'i	0.04[1]
				Mexico-North Pacific	UNK[1,2]
Beluga whale	0	72	72	Cook Inlet	21.75
Killer whale	0	6	6	Eastern North Pacific Alaska Resident	0.31[1]
				Eastern North Pacific Gulf of Alaska, Aleutian Islands and Bering Sea Transient	1.02[1]
Harbor porpoise	1	17	18	Gulf of Alaska	0.06
Steller sea lion	0	9	9	Western	0.02
Harbor seals	13	234	247	Cook Inlet/ Shelikof Strait	0.87

[1] NMFS conservatively assumes that all takes occur to each stock
[2] NMFS does not have an official abundance estimate for this stock and the minimum population estimate is considered to be unknown (Young *et al.*, 2023)

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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 ITAs 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. 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 POA presented mitigation measures in section 11 of their application that were modeled after the requirements included in the IHAs issued for Phase 1 and Phase 2 PCT construction (85 FR 19294, April 6, 2020) and for SFD construction (86 FR 50057, September 7, 2021), which were designed to minimize the total number, intensity, and duration of harassment events for CIBWs and other marine mammal species during those projects (61N Environmental, 2021, 2022a, 2022b). NMFS concurred that these proposed measures reduce the potential for CIBWs, and other marine mammals, to be adversely impacted by the planned activity.

The POA must employ the following mitigation measures:

- Ensure that construction supervisors, crews, contractors, other personnel operating at the site, the monitoring team, and relevant POA staff are trained on all mitigation, monitoring, and reporting requirements, and all implementing protocols or procedures, as relevant to their respective role or position prior to the start of all pile installation and removal activities, so that responsibilities, communication procedures, monitoring protocols, and operational procedures

are clearly understood. New personnel joining during the project must be trained prior to commencing work;

- Employ PSOs and establish monitoring locations as described in section 5 of the IHA and the POA's Marine Mammal Monitoring and Mitigation Plan (see appendix B of the POA's application). The POA must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions;
- The POA, construction supervisors and crews, PSOs, and relevant POA staff must avoid direct physical interaction with marine mammals during construction activities. If a marine mammal comes within 10-m of such activity, operations shall cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction;
- Monitoring must take place from 30 minutes prior to initiation of pile driving (*i.e.,* pre-start clearance monitoring) through 30 minutes post-completion of pile driving;
- Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in table 13 are clear of marine mammals. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals or when the mitigation measures required specifically for CIBWs (below) are satisfied;
- For all construction activities, shutdown zones must be established following table 13. The purpose of a shutdown zone is generally to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). In addition to the shutdown zones specified in table 13 and the minimum shutdown zone of 10-m described above, requirements included in NMFS' IHA, the POA will implement a minimum 100-m shutdown zone around the active NES1 project work site, including around activities other than pile installation or removal that NMFS has determined do not present a reasonable potential to cause take of marine mammals. Shutdown zones for pile installation and removal will vary based on the type of construction activity and by marine mammal hearing group (table 13). Here, shutdown zones are larger than or equal to the calculated Level A harassment isopleths shown in table 6 for species other than CIBW and are equal to the estimated Level B harassment isopleths for CIBWs;

Table 13 -- Shutdown Zones during Project Activities

Activity	Pile Type / Size	Shutdown Zone (m)					
		LF cetaceans	Non-CIBW MF cetaceans	CIBWs	HF cetaceans	PW	OW
Impact Removal	Sheet pile	160	10	900	190	90	10
Vibratory Installation	24-inch (61-cm)	20	10	2,300	20	10	10
	36-inch (91-cm)	30	10	4,600	40	20	10
	Sheet pile	10	10	2,000	20	10	10
Vibratory Removal	24-inch (61-cm)	50	10	6,900	60	30	10
	36-inch (91-cm)	20	10	1,700	20	10	10
Notes: cm = centimeter(s), m = meter(s)							

- Marine mammals observed anywhere within visual range of the PSO must be tracked relative to construction activities. If a marine mammal is observed entering or within the shutdown zones indicated in table 13, pile driving must be delayed or halted. If pile driving is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone (table 13, or 15 minutes (non-CIBWs) or 30 minutes (CIBWs) have passed without re-detection of the animal;
- The POA 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. PSOs shall begin observing for marine mammals 30 minutes before ''soft start'' or in-water pile installation or removal begins; and
- Pile driving activity must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone.

The following additional mitigation measures are required for CIBWs:

- The POA must make all practicable efforts to complete construction activities between April and July, when CIBWs are typically found in lower numbers near the NES1 site;

• Prior to the onset of pile driving or removal, should a CIBW be observed within the estimated Level B harassment zone (table 7) (*i.e.* the CIBWs shutdown zone column in table 13), pile driving must not commence until the whale(s) has voluntarily traveled at least 100-m beyond the estimated Level B harassment zone and is on a path away from such zone, or the whale has not been re-sighted within 30 minutes;

• If pile installation or removal has commenced, and a CIBW(s) is observed within or likely to enter the estimated Level B harassment zone, pile installation or removal must be delayed. Pile driving may not commence until the whale has voluntarily traveled at least 100-m beyond the Level B harassment zone and is on a path away from such zone, or until no CIBW has been observed in the Level B harassment zone for 30 minutes; and

• If during installation and removal of piles, PSOs can no longer effectively monitor the entirety of the CIBW Level B harassment zone due to environmental conditions (*e.g.,* fog, rain, wind), pile driving may continue only until the current segment of the pile is driven; no additional sections of pile or additional piles may be driven until conditions improve such that the Level B harassment zone can be effectively monitored. If the Level B harassment zone cannot be monitored for more than 15 minutes, the entire Level B harassment zone will be cleared again for 30 minutes prior to pile driving.

In addition to these additional mitigation measures, NMFS had requested that the POA restrict all pile driving and removal work to April to July, when CIBWs are typically found in lower numbers. However, given the safety and environmental concerns of collapse of the Northern Extension once removal work commences, required sequencing of pile installation and removal and fill removal, and uncertainties and adaptive nature of the work, the POA stated that it cannot commit to restricting pile driving and removal to April to July. Instead, as required in the mitigation measures, NMFS will require the POA to complete as much work as is practicable in April to July to reduce the amount of pile driving and removal activities needed in August through November.

For previous IHAs issued to the POA (PCT: 85 FR 19294, April 6, 2020; SFD: 86 FR 50057, September 7, 2021), the use of a bubble curtain to reduce noise has been required as a mitigation measure for certain pile driving scenarios. The POA did not propose to use a bubble curtain system during the NES1 project, stating that it is not a practicable mitigation measure for this demolition project. NMFS concurred with this determination. Practicability concerns include the following:

• NES1 construction activities include installation of round, temporary, stability template piles to shore up the filled NES1 structure while fill material and sheet piles are removed. Stability template piles that will be required for demolition of the sheet pile structure are located in proximity of the sheet piles. A bubble curtain will not physically fit between the sheet piles and the template piles;

• Bubble curtains cannot be installed around the sheet piles as they are removed because the structure consists of sheet piles that are connected to one another and used to support fill-material. It will not be possible to place a bubble curtain system along the sheet pile face for similar reasons, including lack of space for the bubble curtain and the structures and equipment that will be needed to install and operate it, and the high likelihood that it could not function or be retrieved; and

• NES1 is a failed structure, and has been deemed ''globally unstable'' and poses significant risk for continued deterioration and structural collapse. If the existing structure were to collapse during deconstruction and sheet pile removal, there is risk of a significant release of impounded fill material into CIBW habitat, the POA's vessel operating and mooring areas, and the USACE Anchorage Harbor Project. Due to the stability risk of the existing impounded material, it is expected that construction and demolition means and methods will be highly adaptive once actual field work commences, and use of a bubble curtain with deconstruction will limit operations in the field and create significant health and safety issues.

The POA also has efficacy concerns about requiring a bubble curtain for NES1 construction activities. Adding a requirement for a bubble curtain may hinder production, due to the time required to install and remove the bubble curtain itself. This has the potential to drive the in-water construction schedule further into the late summer months, which are known for higher CIBW abundance in lower Knik Arm, thus lengthening the duration of potential interactions between CIBW and in-water work. Therefore, NMFS is concerned that use of a bubble curtain may not be an effective measure, given the potential that bubble curtain use could ultimately result in increased impacts to CIBW, in addition to the aforementioned practicability issues.

Based on our evaluation of the applicant's planned measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures required herein 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.

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 POA will implement a marine mammal monitoring and mitigation strategy intended to avoid and minimize impacts to marine mammals (see appendix B of the POA's application for their Marine Mammal Monitoring and Mitigation Plan). Marine mammal monitoring will be conducted at all times when in-water pile installation and removal is taking place. Additionally, PSOs will be on-site monitoring for marine mammals during in-water cutting of sheet piles with shears or an ultrathermic torch.

The marine mammal monitoring and mitigation program that is planned for NES1 construction is modeled after the stipulations outlined in the IHAs for Phase 1 and Phase 2 PCT construction (85 FR 19294, April 6, 2020) and the IHA for SFD construction (86 FR 50057, September 7, 2021).

Visual Monitoring

Monitoring must be conducted by qualified, NMFS-approved PSOs, in accordance with the following:

- PSOs must be independent of the activity contractor (*e.g.,* employed by a subcontractor) and have no other assigned tasks during monitoring periods. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued ITA or Letter of Concurrence. Other PSOs may substitute other relevant experience (including relevant Alaska native traditional knowledge), education (degree in biological science or related field), or training for prior experience performing the duties of a PSO. PSOs must be approved by NMFS prior to beginning any activity subject to this IHA;
- The POA must employ PSO stations at a minimum of two locations from which PSOs can effectively monitor the shutdown zones (table 13). Concerns about the stability of the NES1 project area preclude determination of the exact number and locations of PSO stations until the Construction Contractor develops their Construction Work Plan. PSO stations must be positioned at the best practical vantage points that are determined to be safe. Likely locations include the Anchorage Public Boat Dock at Ship Creek to the south of the NES1 project site, and a location to the north of the project site, such as the northern end of POA property near Cairn Point (see North Extension area on figure 12–1 in the POA's application) or at Port MacKenzie across Knik Arm (see figure 12–1 in the POA's application for potential locations of PSO stations). A location near the construction activity may not be possible given the risk of structural collapse as outlined in the POA's IHA application. Placing a PSO on the northernmost portion of Terminal 3 will also be considered if deemed safe. Areas near Cairn Point or Port MacKenzie have safety, security, and logistical issues, which will need to be considered. Cairn Point proper is located on military land and has bear presence, and restricted access does not allow for the location of an observation station at this site. Tidelands along Cairn Point are accessible only during low tide conditions and have inherent safety concerns of being trapped by rising tides. Port MacKenzie is a secure port that is relatively remote, creating safety, logistical, and physical staffing limitations due to lack of nearby lodging and other facilities. The roadway travel time between port sites is approximately 2–3 hours. An adaptive management measure is planned for a monitoring location north of the project site, once the Construction Contractor has been selected and more detailed discussions can occur. Temporary staffing of a northerly monitoring station during peak marine mammal presence time periods and/or when shutdown zones are large will be considered;
- PSOs stations must be elevated platforms constructed on top of shipping containers or a similar base that is at least 8' 6'' high (*i.e.,* the standard height of a shipping container) that can support up to three PSOs and their equipment. The platforms must be stable enough to support use of a theodolite and must be located to optimize the PSO's ability to observe marine mammals and the harassment zones;
- Each PSO station must have at least two PSOs on watch at any given time; one PSO must be observing, one PSO must be recording data (and observing when there are no data to record). Teams of three PSOs must include at least one PSO who must be observing and one PSO who must be recording data (and observing when there are no data to record). The third PSO may help to observe, record data, or rest. In addition, if POA is conducting non-NES1-related in-water work that includes PSOs, the NES1 PSOs must be in real-time contact with those PSOs, and both sets of PSOs must share all information regarding marine mammal sightings with each other;
- A designated lead PSO must always be on site. The lead observer must have prior experience performing the duties of a PSO during in-water construction activities pursuant to a NMFS-issued ITA or Letter of Concurrence. Each PSO station must also have a designated lead PSO specific to that station and shift;
- PSOs will use a combination of equipment to perform marine mammal observations and to verify the required monitoring distance from the project site, including 7 by 50 binoculars, 20x/40x tripod mounted binoculars, 25 by 150 ''big eye'' tripod mounted binoculars, and theodolites; and
- PSOs must record all observations of marine mammals, regardless of distance from the pile being driven. PSOs shall document any behavioral responses in concert with distance from piles being driven or removed.

PSOs must have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to record required information including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Reporting

NMFS will require the POA to submit interim weekly and monthly monitoring reports during the NES1 construction season. These reports must include a summary of marine mammal species and behavioral observations, construction shutdowns or delays, and construction work completed. They also must include an assessment of the amount of construction remaining to be completed (*i.e.,* the number of estimated hours of work remaining), in addition to the number of CIBWs observed within estimated harassment zones to date.

A draft summary marine mammal monitoring report (that includes final electronic data sheets) must be submitted to NMFS within 90 days after the completion of all construction activities, or 60 days prior to a requested

date of issuance of any future ITA for projects at the same location, whichever comes first. The report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. PSO data sheets should be submitted in a format that can be queried such as a spreadsheet or database (*i.e.,* digital images of data sheets are not sufficient). Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (*i.e.,* impact or vibratory), the total equipment duration for vibratory installation and removal, and the total number of strikes for each pile during impact driving;
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information: name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; time of sighting; identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species; distance and bearing of each marine mammal observed relative to the pile being driven for each sighting (if pile driving was occurring at time of sighting); estimated number of animals (minimum, maximum, and best estimate); estimated number of animals by cohort (adults, juveniles, neonates, group composition, sex class, *etc.*); animal's closest point of approach and estimated time spent within the harassment zone; group spread and formation (for CIBWs only); description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses that may have resulted from the activity (*e.g.,* no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
- Number of marine mammals detected within the harassment zones and shutdown zones, by species; and
- Detailed information about any implementation of any mitigation triggered (*e.g.,* shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

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

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder must immediately cease the specified activities and report the incident to OPR, NMFS (*PR.ITP.MonitoringReports@noaa.gov*), and to the Alaska Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the POA must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. The POA must not resume their activities until notified by NMFS. The report must include the following information:

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

Negligible Impact Analysis and Determination

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

To avoid repetition, this introductory discussion of our analysis applies to all the species listed in table 12, except CIBWs, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. For CIBWs, there are meaningful differences in anticipated individual responses to activities, impact of expected take on the population, or impacts on habitat; therefore, we provide a separate detailed analysis for CIBWs following the analysis for other species for which we authorize take.

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 potential effects of the specified actions on gray whales, humpback whales, killer whales, harbor porpoises, Steller sea lions, and harbor seals are discussed below. Some of these factors also apply to CIBWs; however, a more detailed analysis for CIBWs is provided in a separate sub-section below.

Pile driving associated with the project, as outlined previously, has the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment and, for some

species, Level A harassment, from underwater sounds generated by pile driving. Potential takes could occur if marine mammals are present in zones ensonified above the thresholds for Level B harassment or Level A harassment, identified above, while activities are underway.

The POA's planned activities and associated impacts will occur within a limited, confined area of the stocks' range. The work will occur in the vicinity of the NES1 site and sound from the planned activities will be blocked by the coastline along Knik Arm along the eastern boundaries of the site, and for those harassment isopleths that extend more than 3,000-m (*i.e.,* the vibratory installation of 36-inch (91-cm) piles and vibratory removal of 24-inch (61-inch) piles), directly across the Arm along the western shoreline (see figure 6–4 in the POA's application)). The intensity and duration of take by Level A and Level B harassment will be minimized through use of mitigation measures described herein. Further the amount of take authorized is small when compared to stock abundance (see table 12). In addition, NMFS does not anticipate that serious injury or mortality will occur as a result of the POA's planned activity given the nature of the activity, even in the absence of required mitigation.

Exposures to elevated sound levels produced during pile driving may cause behavioral disturbance of some individuals. Behavioral responses of marine mammals to pile driving at the NES1 project site are expected to be mild, short term, and temporary. Effects on individuals that are taken by Level B harassment, as enumerated in the Estimated Take section, on the basis of reports in the literature as well as monitoring from other similar activities at the POA and elsewhere, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring; *e.g.,* Ridgway *et al.,* 1997; Nowacek *et al.,* 2007; Thorson and Reyff, 2006; Kendall and Cornick, 2015; Goldbogen *et al.,* 2013b; Piwetz *et al.,* 2021). Marine mammals within the Level B harassment zones may not show any visual cues they are disturbed by activities or they could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns or increased haul out time (*e.g.,* Tougaard *et al.,* 2003; Carstensen *et al.,* 2006; Thorson and Reyff, 2006; Parks *et al.,* 2007; Brandt *et al.,* 2011; Graham *et al.,* 2017). However, as described in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), marine mammals, excepting CIBWs, observed within Level A and Level B harassment zones related to recent POA construction activities have not shown any acute observable reactions to pile driving activities that have occurred during the PCT and SFD projects (61N Environmental, 2021, 2022a, 2022b).

Some of the species present in the region will only be present temporarily based on seasonal patterns or during transit between other habitats. These temporarily present species will be exposed to even smaller periods of noise-generating activity, further decreasing the impacts. Most likely, individual animals will simply move away from the sound source and be temporarily displaced from the area. Takes may also occur during important feeding times. The project area though represents a small portion of available foraging habitat and impacts on marine mammal feeding for all species should be minimal.

The activities analyzed here are similar to numerous other construction activities conducted in Alaska (*e.g.,* 86 FR 43190, August 6, 2021; 87 FR 15387, March 18, 2022), including the PCT and SFD projects within Upper Knik Arm (85 FR 19294, April 6, 2020; 86 FR 50057, September 7, 2021, respectively) which have taken place with no known long-term adverse consequences from behavioral harassment. Any potential reactions and behavioral changes are expected to subside quickly when the exposures cease and, therefore, no such long-term adverse consequences should be expected (*e.g.,* Graham *et al.,* 2017). For example, harbor porpoises returned to a construction area between pile-driving events within several days during the construction of offshore wind turbines near Denmark (Carstensen *et al.,* 2006). The intensity of Level B harassment events will be minimized through use of mitigation measures described herein, which were not quantitatively factored into the take estimates. The POA will use PSOs stationed strategically to increase detectability of marine mammals during in-water construction activities, enabling a high rate of success in implementation of shutdowns to avoid or minimize injury for most species. Further, given the absence of any major rookeries and haulouts within the estimated harassment zones, we assume that potential takes by Level B harassment will have an inconsequential short-term effect on individuals and will not result in population-level impacts.

As stated in the mitigation section, the POA will implement shutdown zones that equal or exceed the Level A harassment isopleths shown in table 7. Take by Level A harassment is authorized for some species (harbor seals and harbor porpoises) to account for the potential that an animal could enter and remain within the Level A harassment zone for a duration long enough to incur PTS. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS because animals will need to be exposed to higher levels and/or longer duration than are expected to occur here in order to incur any more than a small degree of PTS.

Due to the levels and durations of likely exposure, animals that experience PTS will likely only receive slight PTS, *i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the frequency range of the energy produced by POA's in-water construction activities (*i.e.,* the low-frequency region below 2 kHz), not severe hearing impairment or impairment in the ranges of greatest hearing sensitivity. If hearing impairment does occur, it is most likely that the affected animal will lose a few dBs in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. There are no data to suggest that a single instance in which an animal accrues PTS (or TTS) and is subject to behavioral disturbance will result in impacts to reproduction or survival. If PTS were to occur, it will be at a lower level likely to accrue to a relatively small portion of the population by being a stationary activity in one particular location. 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. Because of the small degree anticipated, though, any PTS or TTS potentially incurred here is not expected to adversely impact individual fitness, let alone annual rates of recruitment or survival.

Theoretically, repeated, sequential exposure to pile driving noise over a long duration could result in more severe impacts to individuals that could affect a population (via sustained or repeated disruption of important behaviors such as feeding, resting, traveling, and socializing; Southall *et al.,* 2007). Alternatively, marine mammals exposed to repetitious construction sounds may become

habituated, desensitized, or tolerant after initial exposure to these sounds (reviewed by Richardson *et al.,* 1995; Southall *et al.,* 2007). Given that marine mammals still frequent and use Knik Arm despite being exposed to pile driving activities across many years, these severe population level impacts are not anticipated. The absence of any pinniped haulouts or other known non-CIBW home-ranges in the NES1 action area further decreases the likelihood of severe population level impacts.

The NES1 project is also not expected to have significant adverse effects on any marine mammal habitat. The project activities will occur within the same footprint as existing marine infrastructure, and when construction is complete, subtidal and intertidal habitats previously lost at the project site will be restored. Impacts to the immediate substrate are anticipated, but these will be limited to minor, temporary suspension of sediments, which can impact water quality and visibility for a short amount of time but which will not be expected to have any effects on individual marine mammals. While the area is generally not high quality habitat, it is expected to be of higher quality to marine mammals and fish after NES1 construction is complete as the site returns to its natural state and is colonized by marine organisms. Further, there are no known BIAs near the project zone, except for CIBWs, that will be impacted by the POA's planned activities.

Impacts to marine mammal prey species are also expected to be minor and temporary and to have, at most, short-term effects on foraging of individual marine mammals, and likely no effect on the populations of marine mammals as a whole. Overall, the area impacted by the NES1 project is very small compared to the available surrounding habitat, and does not include habitat of particular importance. The most likely impact to prey will be temporary behavioral avoidance of the immediate area. During construction activities, it is expected that some fish and marine mammals will temporarily leave the area of disturbance, thus impacting marine mammals' foraging opportunities in a limited portion of their foraging range. But, because of the relatively small area of the habitat that may be affected, and lack of any habitat of particular importance, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences. Further, as described above, additional habitat for marine mammal prey will be available after the completion of the POA's construction activities likely providing additional foraging, migrating, and rearing habitats to fish and foraging habitat to marine mammals.

In summary and as described above, the following factors support our negligible impact determinations for the affected stocks of gray whales, humpback whales, killer whales, harbor porpoises, Steller sea lions, and harbor seals:

- No takes by mortality or serious injury are anticipated or authorized;
- Any acoustic impacts to marine mammal habitat from pile driving (including to prey sources as well as acoustic habitat, and including resulting behavioral impacts *e.g.,* from masking) are expected to be temporary and minimal;
- Take will not occur in places and/or times where take will be more likely to accrue to impacts on reproduction or survival, such as within ESA-designated or proposed critical habitat, BIAs, or other habitats critical to recruitment or survival (*e.g.,* rookery);
- The project area represents a very small portion of the available foraging area for all potentially impacted marine mammal species;
- Take will only occur within upper Cook Inlet—a limited, confined area of any given stock's home range;
- Monitoring reports from similar work in Knik Arm have documented little to no observable effect on individuals of the same species impacted by the specified activities;
- The required mitigation measures (*i.e.,* soft starts, pre-clearance monitoring, shutdown zones) are expected to be effective in reducing the effects of the specified activity by minimizing the numbers of marine mammals exposed to injurious levels of sound, and by ensuring that any take by Level A harassment is, at most, a small degree of PTS and of a lower degree that will not impact the fitness of any animals; and
- The intensity of anticipated takes by Level B harassment is low for all stocks consisting of, at worst, temporary modifications in behavior, and will not be of a duration or intensity expected to result in impacts on reproduction or survival.

Cook Inlet Beluga Whales. For CIBWs, we further discuss our negligible impact findings in the context of potential impacts to this endangered stock based on our evaluation of the take authorized (table 12).

As described in the Recovery Plan for the CIBW (NMFS, 2016b), NMFS determined the following physical or biological features are essential to the conservation of this species: (1) Intertidal and subtidal waters of Cook Inlet with depths less than 9-m mean lower low water and within 8-km of high and medium flow anadromous fish streams; (2) Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole; (3) Waters free of toxins or other agents of a type and amount harmful to CIBWs; (4) Unrestricted passage within or between the critical habitat areas; and (5) Waters with in-water noise below levels resulting in the abandonment of critical habitat areas by CIBWs. The NES1 project will not impact essential features 1–3 listed above. All construction will be done in a manner implementing best management practices to preserve water quality, and no work will occur around creek mouths or river systems leading to prey abundance reductions. In addition, no physical structures will restrict passage; however, impacts to the acoustic habitat are relevant and discussed here.

Monitoring data from the POA suggest pile driving does not discourage CIBWs from entering Knik Arm and traveling to critical foraging grounds such as those around Eagle Bay (*e.g.,* 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022). As described in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), sighting rates were not different in the presence or absence of pile driving (Kendall and Cornick, 2015). In addition, large numbers of CIBWs have continued to use Knik Arm and pass through the area during pile driving projects that have taken place at the POA during the past two decades (Funk *et al.,* 2005; Prevel-Ramos *et al.,* 2006; Markowitz and McGuire, 2007; Cornick and Saxon-Kendall, 2008, 2009; ICRC, 2009, 2010, 2011, 2012; Cornick *et al.,* 2010, 2011; Cornick and Pinney, 2011; Cornick and Seagars, 2016; POA, 2019), including during the recent PCT and SFD construction projects (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022). These findings are not surprising as food is a strong motivation for marine mammals. As described in Forney *et al.* (2017), animals typically favor particular areas because of their importance for survival (*e.g.,* feeding or breeding), and leaving may have significant costs to fitness (reduced foraging success, increased predation risk, increased exposure to other anthropogenic threats). Consequently,

animals may be highly motivated to maintain foraging behavior in historical foraging areas despite negative impacts (*e.g.,* Rolland *et al.,* 2012). Previous monitoring data indicates CIBWs are responding to pile driving noise, but not through abandonment of critical habitat, including primary foraging areas north of the port. Instead, they travel more often and faster past the POA, more quietly, and in tighter groups (Kendall and Cornick, 2015; 61N Environmental, 2021, 2022a, 2022b).

While the habitat near the POA is not typically considered high quality foraging habitat for CIBWs and feeding is not a predominant behavior observed in CIBWs near the POA (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022), CIBWs have been observed exhibiting foraging behaviors during pile driving activities in the action area. For example, Saxon-Kendall *et al.* (2013) recorded echolocation clicks (which can be indicative of feeding behavior) during the MTRP both while pile driving was occurring and when it was not. While the action area is located within designated essential fish habitat (EFH) for chum, coho, Chinook, sockeye, and pink salmon; there are no designated areas of particular concern in the vicinity of the POA. Still, increased turbidity, elevation in noise levels during pile driving, and small spills have the potential to impact fish, including preferred prey of CIBWs including Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole. However, CIBWs are known to typically forage in or near river mouths (*e.g.,* Six Mile Creek, Eagle River, Eklutna River) from late spring through summer, which contain predictable salmon runs, and in nearshore bays and estuaries in the fall, when anadromous fish runs decline. Further, there is no evidence to suggest that CIBWs are restricted in transiting between preferred feeding areas during pile driving activities (*e.g.,* 61N Environmental, 2021, 2022a, 2022b, 2022c; Easley-Appleyard and Leonard, 2022). Thus, while there may be some impacts to CIBW prey and CIBW foraging behaviors in the action area, NMFS anticipates that these impacts would be temporary, and most likely related to fish avoiding the action area. NMFS does not anticipate that these impacts would rise to the level of adversely impacting annual rates of recruitment or survival.

During PCT and SFD construction monitoring, little variability was evident in CIBW behaviors recorded from month to month, or between sightings that coincided with in-water pile installation and removal and those that did not (61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022). Of the 386 CIBWs groups sighted during PCT and SFD construction monitoring, 10 groups were observed during or within minutes of in-water impact pile installation and 56 groups were observed during or within minutes of vibratory pile installation or removal (61N Environmental, 2021, 2022a, 2022b). In general, CIBWs were more likely to display no reaction or to continue to move towards the PCT or SFD during pile installation and removal. In the situations during which CIBWs showed a possible reaction (6 groups during impact driving and 13 groups during vibratory driving), CIBWs were observed either moving away immediately after the pile driving activities started or were observed increasing their rate of travel.

NMFS funded a visual marine mammal monitoring project in 2021 (described in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat of the **Federal Register** notice of the proposed IHA; 88 FR 76576, November 6, 2023) to supplement sighting data collected by the POA monitoring program during non-pile driving days in order to further evaluate the impacts of anthropogenic activities on CIBWs (Easley-Appleyard and Leonard, 2022). Preliminary results suggest that group size ranged from 1 to 34 whales, with an average of 3 to 5.6, depending on the month. September had the highest sighting rate with 4.08 whales per hour, followed by October and August (3.46 and 3.41, respectively). Traveling was recorded as the primary behavior for 80 percent of the group sightings and milling was the secondary behavior most often recorded. Sighting duration varied from a single surfacing lasting less than 1 minute to 380 minutes. Preliminary findings suggest these results are consistent with the results from the POA's PCT and SFD monitoring efforts. For example, group sizes ranged from 2.38 to 4.32 depending on the month and the highest sighting rate was observed in September (1.75). In addition, traveling was the predominant behavior observed for all months and categories of construction activity (*i.e.,* no pile driving, before pile driving, during pile driving, between pile driving, or after pile driving), being recorded as the primary behavior for 86 percent of all sightings, and either the primary or secondary behavior for 95 percent of sightings.

Easley-Appleyard and Leonard (2022) also asked PSOs to complete a questionnaire post-monitoring that provided NMFS with qualitative data regarding CIBW behavior during observations. Specifically during pile driving events, the PSOs noted that CIBW behaviors varied; however, multiple PSOs noted seeing behavioral changes specifically during impact pile driving (which will only be used when necessary to loosen piles for vibratory removal or direct pulling during the NES1 project) and not during vibratory pile driving. CIBWs were observed sometimes changing direction, turning around, or changing speed during impact pile driving. There were numerous instances where CIBWs were seen traveling directly towards the POA during vibratory pile driving before entering the Level B harassment zone (POA was required to shutdown prior to CIBWs entering the Level B harassment zone), which is consistent with findings during the POA's PCT and SFD monitoring efforts (61N Environmental, 2021, 2022a, 2022b). The PSOs also reported that it seemed more likely for CIBWs to show more cryptic behavior during pile driving (*e.g.,* surfacing infrequently and without clear direction), though this seemed to vary across months (Easley-Appleyard and Leonard, 2022).

We anticipate that disturbance to CIBWs will manifest in the same manner when they are exposed to noise during the NES1 project: whales will move quickly and silently through the area in more cohesive groups. We do not believe exposure to elevated noise levels during transit past the POA has adverse effects on reproduction or survival as the whales continue to access critical foraging grounds north of the POA, even if having shown a potential reaction during pile driving, and tight associations help to mitigate the potential for any contraction of communication space for a group. We also do not anticipate that CIBWs will abandon entering or exiting Knik Arm, as this is not evident based on previous years of monitoring data (*e.g.,* Kendall and Cornick, 2015; 61N Environmental, 2021, 2022a, 2022b; Easley-Appleyard and Leonard, 2022), and the pre-pile driving clearance mitigation measure is designed to further avoid any potential abandonment. Finally, as described in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat of the **Federal Register** notice of the proposed IHA (88 FR 76576, November 6, 2023), both telemetry (tagging) and acoustic data suggest CIBWs likely stay in upper Knik Arm (*i.e.,* north of the NES1 project site) for several days or weeks before exiting Knik Arm. Specifically, a CIBW

instrumented with a satellite link time/depth recorder entered Knik Arm on August 18, 1999 and remained in Eagle Bay until September 12, 1999 (Ferrero *et al.,* 2000). Further, a recent detailed re-analysis of the satellite telemetry data confirms how several tagged whales exhibited this same movement pattern: whales entered Knik Arm and remained there for several days before exiting through lower Knik Arm (Shelden *et al.,* 2018). This longer-term use of upper Knik Arm will avoid repetitive exposures from pile driving noise.

There is concern that exposure to pile driving at the POA could result in CIBWs avoiding Knik Arm and thereby not accessing the productive foraging grounds north of POA such as Eagle River flats thus, impacting essential feature number five above. Although the data previously presented demonstrate CIBWs are not abandoning the area (*i.e.,* no significant difference in sighting rate with and without pile driving), results of an expert elicitation (EE) at a 2016 workshop, which predicted the impacts of noise on CIBW survival and reproduction given lost foraging opportunities, helped to inform our assessment of impacts on this stock. The 2016 EE workshop used conceptual models of an interim population consequences of disturbance (PCoD) for marine mammals (NRC, 2005; New *et al.,* 2014; Tollit *et al.,* 2016) to help in understanding how noise-related stressors might affect vital rates (survival, birth rate and growth) for CIBW (King *et al.,* 2015). NMFS (2016b) suggests that the main direct effects of noise on CIBW are likely to be through masking of vocalizations used for communication and prey location and habitat degradation. The 2016 workshop on CIBWs was specifically designed to provide regulators with a tool to help understand whether chronic and acute anthropogenic noise from various sources and projects are likely to be limiting recovery of the CIBW population. The full report can be found at *https://www.smruconsulting.com/publications/* with a summary of the EE portion of the workshop below.

For each of the noise effect mechanisms chosen for EE, the experts provided a set of parameters and values that determined the forms of a relationship between the number of days of disturbance a female CIBW experiences in a particular period and the effect of that disturbance on her energy reserves. Examples included the number of days of disturbance during the period April, May, and June that would be predicted to reduce the energy reserves of a pregnant CIBW to such a level that she is certain to terminate the pregnancy or abandon the calf soon after birth, the number of days of disturbance in the period April–September required to reduce the energy reserves of a lactating CIBW to a level where she is certain to abandon her calf, and the number of days of disturbance where a female fails to gain sufficient energy by the end of summer to maintain themselves and their calves during the subsequent winter. Overall, median values ranged from 16 to 69 days of disturbance depending on the question. However, for this elicitation, a ''day of disturbance'' was defined as any day on which an animal loses the ability to forage for at least one tidal cycle (*i.e.,* it forgoes 50–100 percent of its energy intake on that day). The day of disturbance considered in the context of the report is notably more severe than the Level B harassment expected to result from these activities, which as described is expected to be comprised predominantly of temporary modifications in the behavior of individual CIBWs (*e.g.,* faster swim speeds, more cohesive group structure, decreased sighting durations, cessation of vocalizations). Also, NMFS authorized 72 instances of takes, with the instances representing disturbance events within a day—this means that either 72 different individual CIBWs are disturbed on no more than 1 day each, or some lesser number of individuals may be disturbed on more than 1 day, but with the product of individuals and days not exceeding 72. Given the overall anticipated take, it is unlikely that any one CIBW will be disturbed on more than a few days. Further, the mitigation measures NMFS has prescribed for the NES1 project are designed to avoid the potential that any animal will lose the ability to forage for one or more tidal cycles should they be foraging in the NES1 project area, which is not known to be a particularly important feeding area for CIBWs. While Level B harassment (behavioral disturbance) will be authorized, the POA's mitigation measures will limit the severity of the effects of that Level B harassment to behavioral changes such as increased swim speeds, tighter group formations, and cessation of vocalizations, not the loss of foraging capabilities. Regardless, this elicitation recognized that pregnant or lactating females and calves are inherently more at risk than other animals, such as males. NMFS has determined all CIBWs warrant pile driving shutdown to be protective of potential vulnerable life stages, such as pregnancy, that cannot be determined from observations, and to avoid more severe behavioral reaction.

NMFS has prescribed mitigation measures to minimize exposure to CIBWs, specifically, shutting down pile driving should a CIBW approach or enter the Level B harassment zone. These measures are designed to ensure CIBWs will not abandon critical habitat and exposure to pile driving noise will not result in adverse impacts on the reproduction or survival of any individuals. The location of the PSOs will allow for detection of CIBWs and behavioral observations prior to CIBWs entering the Level B harassment zone. Further, impact driving appeared to cause behavioral reactions more readily than vibratory hammering (61N Environmental, 2021, 2022a, 2022b), which will only be used in situations where sheet piles remain seized in the sediments and cannot be loosened or broken free with a vibratory hammer, which is expected to be uncommon during the NES1 project. If impact driving does occur, the POA must implement soft starts, which ideally allows animals to leave a disturbed area before the full-power driving commences (Tougaard *et al.,* 2012). Although NMFS does not anticipate CIBWs will abandon entering Knik Arm in the presence of pile driving with the required mitigation measures, PSOs will be integral to identifying if CIBWs are potentially altering pathways they would otherwise take in the absence of pile driving. Finally, take by mortality, serious injury, or Level A harassment of CIBWs is not anticipated or authorized.

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

- No mortality is anticipated or authorized;
- The area of exposure will be limited to habitat primarily used as a travel corridor. Data demonstrates Level B harassment of CIBWs typically manifests as increased swim speeds past the POA, tighter group formations, and cessation of vocalizations, rather than through habitat abandonment;
- No critical foraging grounds (*e.g.,* Eagle Bay, Eagle River, Susitna Delta) will be impacted by pile driving; and
- While animals may be harassed more than once, exposures are not likely to exceed more than a few per year for any given individual and are not expected to occur on sequential days; thereby decreasing the likelihood of physiological impacts caused by chronic stress or masking.

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 required monitoring and mitigation measures, NMFS finds that the total marine mammal take from the specified 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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

For all stocks, except for the Mexico-North Pacific stock of humpback whales whose abundance estimate is unknown, the amount of taking is less than one-third of the best available population abundance estimate (in fact it is less than 2 percent for all stocks, except for CIBWs whose authorized take is 22 percent of the stock; table 12). The number of animals authorized to be taken from these stocks would be considered small relative to the relevant stock's abundances even if each estimated take occurred to a new individual. The amount of take authorized likely represents smaller numbers of individual harbor seals and Steller sea lions. Harbor seals tend to concentrate near Ship Creek and have small home ranges. It is possible that a single individual harbor seal may linger near the POA, especially near Ship Creek, and be counted multiple times each day as it moves around and resurfaces in different locations. Previous Steller sea lion sightings identified that if a Steller sea lion is within Knik Arm, it is likely lingering to forage on salmon or eulachon runs and may be present for several days. Therefore, the amount of take authorized likely represents repeat exposures to the same animals. For all species, PSOs will count individuals as separate unless they cannot be individually identified.

Abundance estimates for the Mexico-North Pacific stock of humpback whales are based upon data collected more than 8 years ago and, therefore, current estimates are considered unknown (Young *et al.,* 2023). The most recent minimum population estimates (N_{MIN}) for this population include an estimate of 2,241 individuals between 2003 and 2006 (Martinez-Aguilar, 2011) and 766 individuals between 2004 and 2006 (Wade, 2021). NMFS' Guidelines for Assessing Marine Mammal Stocks suggest that the N_{MIN} estimate of the stock should be adjusted to account for potential abundance changes that may have occurred since the last survey and provide reasonable assurance that the stock size is at least as large as the estimate (NMFS, 2023b). The abundance trend for this stock is unclear; therefore, there is no basis for adjusting these estimates (Young *et al.,* 2023). Assuming the population has been stable, the 4 takes of this stock authorized represents small numbers of this stock (0.18 percent of the stock assuming a N_{MIN} of 2,241 individuals and 0.52 percent of the stock assuming an N_{MIN} of 766 individuals).

Based on the analysis contained herein of the planned activity (including the required mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will 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.

While no significant subsistence activity currently occurs within or near the POA, Alaska Natives have traditionally harvested subsistence resources, including marine mammals, in upper Cook Inlet for millennia. CIBWs are more than a food source; they are important to the cultural and spiritual practices of Cook Inlet Native communities (NMFS, 2008b). Dena'ina Athabascans, currently living in the communities of Eklutna, Knik, Tyonek, and elsewhere, occupied settlements in Cook Inlet for the last 1,500 years and have been the primary traditional users of this area into the present.

NMFS estimated that 65 CIBWs per year (range 21–123) were killed between 1994 and 1998, including those successfully harvested and those struck and lost. NMFS concluded that this number was high enough to account for the estimated 14 percent annual decline in population during this time (Hobbs *et al.,* 2008); however, given the difficulty of estimating the number of whales struck and lost during the hunts, actual mortality may have been higher. During this same period, population abundance surveys indicated a population decline of 47 percent, although the reason for this decline should not be associated solely with subsistence hunting and likely began well before 1994 (Rugh *et al.,* 2000).

In 1999, a moratorium was enacted (Pub. L. 106–31) prohibiting the subsistence harvest of CIBWs except through a cooperative agreement between NMFS and the affected Alaska Native organizations. NMFS began working cooperatively with the Cook Inlet Marine Mammal Council (CIMMC), a group of tribes that traditionally hunted CIBWs, to establish sustainable harvests. CIMMC voluntarily curtailed its harvests in 1999. In 2000, NMFS designated the Cook Inlet stock of beluga whales as depleted under the MMPA (65 FR 34590, May 31, 2000). NMFS and CIMMC signed Co-Management of the Cook Inlet Stock of Beluga Whales agreements in 2000, 2001, 2002, 2003, 2005, and 2006. CIBW harvests between 1999 and 2006 resulted in the strike and harvest of five whales, including one whale each in 2001, 2002, and 2003, and two whales in 2005 (NMFS, 2008b). No hunt occurred in 2004 due to higher-than-normal mortality of CIBWs in 2003, and the Native Village of Tyonek agreed to not hunt in 2007. Since 2008, NMFS has examined how many CIBWs could be harvested during 5-year intervals based on estimates of population size and growth rate and determined that no harvests would occur between 2008 and 2012 and between 2013 and 2017 (NMFS, 2008b). The CIMMC was disbanded by unanimous vote of the CIMMC member Tribes' representatives in June 2012, and a replacement group of Tribal members has not been formed

to date. There has been no subsistence harvest of CIBWs since 2005 (NMFS, 2022d).

Subsistence harvest of other marine mammals in upper Cook Inlet is limited to harbor seals. Steller sea lions are rare in upper Cook Inlet; therefore, subsistence use of this species is not common. However, Steller sea lions are taken for subsistence use in lower Cook Inlet. Residents of the Native Village of Tyonek are the primary subsistence users in the upper Cook Inlet area. While harbor seals are hunted for subsistence purposes, harvests of this for traditional and subsistence uses by Native peoples have been low in upper Cook Inlet (*e.g.,* 33 harbor seals were harvested in Tyonek between 1983 and 2013; see table 8–1 in the POA's application), although these data are not currently being collected and summarized. As the POA's planned project activities will take place within the immediate vicinity of the POA, no activities will occur in or near Tyonek's identified traditional subsistence hunting areas. As the harvest of marine mammals in upper Cook Inlet is historically a small portion of the total subsistence harvest, and the number of marine mammals using upper Cook Inlet is proportionately small, the number of marine mammals harvested in upper Cook Inlet is expected to remain low.

The potential impacts from harassment on stocks that are harvested in Cook Inlet will be limited to minor behavioral changes (*e.g.,* increased swim speeds, changes in dive time, temporary avoidance near the POA, *etc.*) within the vicinity of the POA. Some PTS may occur; however, the shift is likely to be slight due to the implementation of mitigation measures (*e.g.,* shutdown zones, pre-clearance monitoring, soft starts) and the shift will be limited to lower pile driving frequencies, which are on the lower end of phocid and otariid hearing ranges. In summary, any impacts to harbor seals will be limited to those seals within Knik Arm (outside of any hunting area) and the very few takes of Steller sea lions in Knik Arm will be far removed in time and space from any hunting in lower Cook Inlet.

The POA will communicate with representative Alaska Native subsistence users and Tribal members to identify and explain the measures that have been taken or will be taken to minimize any adverse effects of NES1 on the availability of marine mammals for subsistence uses. In addition, the POA will adhere to the following procedures during Tribal consultation regarding marine mammal subsistence use within the Project area:

(1) Send letters to the Kenaitze, Tyonek, Knik, Eklutna, Ninilchik, Salamatof, and Chickaloon Tribes informing them of the planned project (*i.e.,* timing, location, and features). Include a map of the planned project area; identify potential impacts to marine mammals and mitigation efforts, if needed, to avoid or minimize impacts; and inquire about possible marine mammal subsistence concerns they have;

(2) Follow up with a phone call to the environmental departments of the seven Tribal entities to ensure that they received the letter, understand the project, and have a chance to ask questions. Inquire about any concerns they might have about potential impacts to subsistence hunting of marine mammals;

(3) Document all communication between the POA and Tribes; and

(4) If any Tribes express concerns regarding project impacts to subsistence hunting of marine mammals, propose a Plan of Cooperation between the POA and the concerned Tribe(s).

The NES1 project features and activities, in combination with a number of actions to be taken by the POA during project implementation, should avoid or mitigate any potential adverse effects on the availability of marine mammals for subsistence uses. Furthermore, although construction will occur within the traditional area for hunting marine mammals, the project area is not currently used for subsistence activities. In-water pile installation and removal will follow mitigation procedures to minimize effects on the behavior of marine mammals, and impacts will be temporary.

The POA has expressed, if desired, regional subsistence representatives may support project marine mammal biologists during the monitoring program by assisting with collection of marine mammal observations and may request copies of marine mammal monitoring reports.

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 required mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from the POA's planned activities.

Endangered Species Act

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

There are three marine mammal species (the Mexico DPS and Western North Pacific DPS of humpback whale, CIBWs, and western DPS Steller sea lion) with confirmed occurrence in the project area that are listed as endangered or threatened under the ESA. The NMFS Alaska Regional Office issued a BiOp on December 15, 2023, under section 7 of the ESA, on the issuance of an IHA to the POA under section 101(a)(5)(D) of the MMPA by the NMFS OPR. The BiOp concluded that the specified action is not likely to jeopardize the continued existence of the Mexico DPS and Western North Pacific DPS of humpback whale, CIBWs, or western DPS Steller sea lions, and is not likely to destroy or adversely modify CIBW critical habitat. There is no critical habitat designated for humpback whales or Steller sea lions in the action area.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and 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. Accordingly, NMFS prepared an Environmental Assessment (EA). The EA supported a FONSI. A copy of the EA and FONSI is available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Authorization

NMFS has issued an IHA to the POA for the potential harassment of small numbers of seven marine mammal species incidental to the NES1 project in Anchorage, Alaska, that includes the previously explained mitigation, monitoring and reporting requirements.

Dated: January 8, 2024.

Kimberly Damon-Randall,

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

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