DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XR027]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction of the Port of Alaska's Petroleum and Cement Terminal, Anchorage, Alaska

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

ACTION: Notice; issuance of incidental harassment authorizations.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that we have issued two successive incidental harassment authorizations (IHA) to the Port of Alaska (POA), authorizing the take of small numbers of marine mammals incidental to construction of the Petroleum and Cement Terminal (PCT), Anchorage, Alaska.

DATES: The Phase 1 IHA is effective April 1, 2020 through March 31, 2021. The Phase 2 IHA is effective April 1, 2021 through March 31, 2022.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Availability

Electronic copies of the POA's application, issued IHAs, and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.* In case of problems accessing these documents, please call the contact listed above.

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 issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review. Under the MMPA, ''take'' is defined as meaning to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

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 such 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 such 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 November 28, 2018, NMFS received a request from the POA for an IHA to take marine mammals incidental to pile driving associated with the construction of the PCT. The POA submitted a new application on July 19, 2019 due to a modified construction schedule (two phases instead of one) and a revised application on August 9, 2019. We deemed the application adequate and complete on August 28, 2019. The POA submitted a subsequent revised application on October 15, 2019, which is available at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.* The POA's request is for take of small numbers of six species of marine mammals, by Level B harassment. Four of the species could also be taken by Level A harassment. Neither the POA nor NMFS expects serious injury or mortality to result from this activity; therefore, an IHA is appropriate.

NMFS previously issued IHAs and Letters of Authorization (LOAs) to the POA for pile driving (73 FR 41318, July 18, 2008; 74 FR 35136, July 20, 2009; and 81 FR 15048; March 21, 2016). The POA complied with all the requirements (*e.g.,* mitigation, monitoring, and reporting) of all previous incidental take authorizations and did not exceed authorized take. Summaries of previous monitoring reports may be found in the *Effects of the Specified Activity on Marine Mammals and their Habitat* and *Estimated Take* sections.

Description of Proposed Activity

We provided a detailed description of the POA's PCT activities in the notice of proposed IHAs (84 FR 72154, December 30, 2019). Since that time, the POA has modified the design. While the overall plan for the terminal layout and construction methods are the same, the POA has considered NMFS's recommendations during the proposed IHAs phase and made the following adjustments. In February, 2020, the POA indicated to NMFS they have removed the use of battered piles in Phase 1. As indicated in the notice of proposed IHAs, a bubble curtain could not be used on battered piles due to the angle of their installation. With the removal of battered piles from Phase 1, all piles in Phase 1 will now be plumb and be installed and removed using a bubble curtain. The POA retains installing six 24-inch (in) battered piles in Phase 2 but will continue to investigate if these can be replaced with plumb piles. Although our analysis related to the Phase 2 IHA assumes that these six piles will be battered piles and therefore installed without use of the bubble curtain, it is possible that this will change and the effects associated with installation of those piles will be less than what is analyzed herein. The POA has also indicated to NMFS it is likely going to reduce the number of temporary piles in Phase 1 by approximately 11 piles; however, in the case of unforeseen circumstances, those additional piles may be necessary. Therefore, despite the POA likely driving and removing 11 fewer piles in Phase 1, we have continued to evaluate the project based on the original total number of piles.

A significant change in POA's project is the use of a confined bubble curtain in Phase 1. This confined bubble curtain is expected to result in less noise propagating into the marine environment than an unconfined system. Despite the expected reduction of noise, we maintain the estimated source levels used in the notice of proposed IHAs, meaning that our analysis likely represents an overestimate of potential effects. We have updated the pile details (Table 1) and included a detailed description of the confined bubble curtain below.

TABLE 1—PCT CONSTRUCTION PILE DETAILS AND ESTIMATED EFFORT REQUIRED FOR PILE INSTALLATION AND REMOVAL

Pipe pile diameter	Structural feature	Number of piles	Total number of piles	Average embedded depth (feet)	Vibratory duration per pile (minutes)	Impact strikes per pile	Estimated total number of hours	Production rate piles per day (range)	Days of installation and removal
Phase 1									
48-in	Loading Platform	45	71	100	30 10% (7 piles):	2,300 (50 restrikes each for 4 piles).	73	1.5 (1–3)	30.
	Access Trestle	26		130		3,000 (50 restrikes each for 3 piles).	56		17.
36-in	Temporary Construction Work Trestle.	26	30	115	75	50 restrikes for 10 piles.	33	3 (2–4)	9 installation. 9 removal.
	Temporary Derrick Barge/Vessel Mooring.	4		40	75	NA	5	4	1 installation. 1 removal.
24-in	Temporary Construction Work Trestle.	34	81	140	75	50 restrikes for 10 piles.	90	3 (2–4)	15 installation. 15 removal.
	Temporary Construction Access Trestle and Loading Platform Templates.	38		105	75	NA	90	3 (2–4)	12 installation. 12 removal.
	Temporary mooring for construction vessels.	9		50	30	NA	12	3	3 installation. 3 removal.
Phase 1 Construction Totals			182 piles				359		127.
Phase 2									
24-in	Temporary Dolphins for mooring construction vessels.	3	9	50	30	NA	3	3	1 installation. 1 removal.
	Temporary Dolphins for mooring construction vessels, Battered.	6		50	30	NA	9	3	2 installation. 2 removal.
36-in	Temporary Construction Dolphin Template.	72	76	115	75	NA	180	3 (2–4)	24 installation. 24 removal.
	Temporary Derrick Barge.	4		40	75	NA	5	4	1 installation. 1 removal.
144-in	Mooring Dolphin	6	9	140	45 10% (1 pile)	5,000 (1,500 first day, 3,500 second day).	21	0.5	13.
	Breasting Dolphin	3		135			11	(0.3 or 0.7)	6.
Phase 2 Construction Totals			94 piles				229		75.
PCT Construction Totals[e]			276 piles				588		202 days of installation and removal.

The estimated source levels for each pile type and installation method are provided in Table 2. These source levels are from the acoustic monitoring during the POA's 2016 Test Pile Program (TPP) (for 48-in piles) and investigation of existing literature related to studies at other locations for non-48-in piles. We note the source level measured during installation of the 48-in piles was actually less than that used here (approximately 190 dB) and the POA is now confining the bubble curtain with a solid pile. However, as a conservative approach to our analysis, we are assuming higher source levels here. We note that the hydroacoustic monitoring plan will commence as soon as pile driving begins; therefore, any necessary modifications to harassment isopleths will be made within the first weeks of pile driving, when marine mammal presence in the project area is low.

TABLE 2—ESTIMATED PILE SOURCE LEVELS WITH AND WITHOUT BUBBLE CURTAINS

Method and pile size	Sound level at 10 m						Data source
Vibratory	Unattenuated			Bubble curtain [1]			
	db rms			7 dB reduction, dB rms			
144-in	178			171			Caltrans 2015.
48-in	168			161			Austin et al. 2016.
36-in	166			159			Navy 2015.
24-in	161			154			Navy 2015.
Impact	Unattenuated			Bubble curtain			
	dB rms	dB SEL	dB peak	dB rms	dB SEL	dB peak	
144-in	209	198	220	202	191	213	Caltrans 2015.
48-in	200	187	215	193	180	208	Austin et al. 2016.
36-in	194	184	211	187	177	204	Navy 2015.
24-in	193	181	210	186	174	203	Navy 2015.

[1] In Phase 1, POA will drive all piles with a confined bubble curtain.

Bubble Curtain

In Phase 1, the POA, at the request of NMFS, has further improved their bubble curtain design to include a confined bubble curtain. If this system is proven successful through hydroacoustic monitoring, the POA and NMFS will consult to determine if its use in Phase 2 is appropriate. The POA has indicated this system may be used in Phase 2; however, at this time, NMFS is limiting its required use to Phase 1. For Phase 1 PCT construction, the construction contractor has provided a detailed confined bubble curtain system, as discussed below. For Phase 2 PCT construction, the construction contractor is not scheduled to be selected until approximately the third quarter of 2020; therefore, a similar level of detail and specificity is not currently available. NMFS will continue to work with POA during 2020 and final bubble curtain requirements will be made prior to work commencing in April 2021 pending review of success in Phase 1. However, at minimum, an unconfined bubble curtain is required on installation and removal of all plumb piles (*i.e.,* all piles except for the six battered piles) during Phase 2.

During the PCT Project, an air bubble curtain noise attenuation system (bubble curtain) will be used during installation and removal of all plumb piles when water depth is great enough (approximately 3 m) to deploy the bubble curtain. If the six battered piles (piles installed at an angle) are used in Phase 2, a bubble curtain will not be used due to the angle of installation. It may not be possible to use a bubble curtain on piles installed or removed in shallow water and piles installed or removed ''in the dry,'' (*e.g.,* when piles are installed above the water line). The tides at the POA have a mean range of about 8.0 meters (26 feet)(NOAA 2019), and low water levels will prevent proper deployment and function of the bubble curtain system. When the water is too shallow for deployment of a bubble curtain, the harassment zones for unattenuated impact pile installation will be monitored.

For Phase 1, the POA will use a confined bubble curtain on all piles. We note a confined system was briefly tested during the 2016 TPP project; however, the sleeve (or pile casing) used during that test contained gaps that likely contributed to less sound absorption. Here, the sleeve is a solid steel pile; therefore, no gaps are present.

The bubble curtain air flows and annular space will conform to the guidance outlined in the National Marine Fisheries Service and U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office document dated October 31, 2006 titled ''Impact Pile Driving Sound Attenuation Specification'' (USFWS 2006).

In Phase 1, all 24-in diameter temporary piles will have a 48-in diameter confinement casing, and all 36-in diameter temporary piling will have a 60-in diameter confinement casing. Multiple confinement casings with bubble curtain hardware will be employed to the extent required if multiple pile driving is occurring concurrently. Temporary piles and the confinement casing, with installed bubble curtain hardware, will be lofted together with the piles in a concentric arrangement, and allowed to drop onto the seafloor. The weight of the configuration will embed the arrangement into the seafloor at an estimated shallow depth. The specific depth of penetration from self-weight varies depending on water depth, substrate, weight of pile, tidal stage resistance, and other physical factors present, but the contractor has estimated a minimum of a couple or few feet.

There will be an arrangement of spacers that center the piling within the confinement casing. These spacers will likely be resilient materials such as rubber spacers or air filled cushions, as called out in the USFWS/NMFS Bubble Curtain Specifications, to prevent metal-to-metal contact between the confinement casing and the pile. The amount of self-weight penetration into sediment is somewhat variable but is expected to be several feet. The lowest bubble ring will be within one to two feet of the seafloor. Figure 1 illustrates this concentric arrangement.

Once the bubble curtain is operational, the temporary pile will be driven with a combination of vibratory and impact methods within the confinement casing; after pile driving, the confinement casing will be lifted off of the temporary pile. For removal of the temporary piling, the confinement casing, with installed bubble curtain, will be re-deployed over the pile. The temporary piles will be removed with a vibratory hammer while the bubble curtain is operational. Once the temporary pile is extracted, both the temporary pile and bubble curtain sleeve will be removed at the same time. A vibratory hammer will not be required to remove the bubble curtain sleeve—it will be directly pulled.

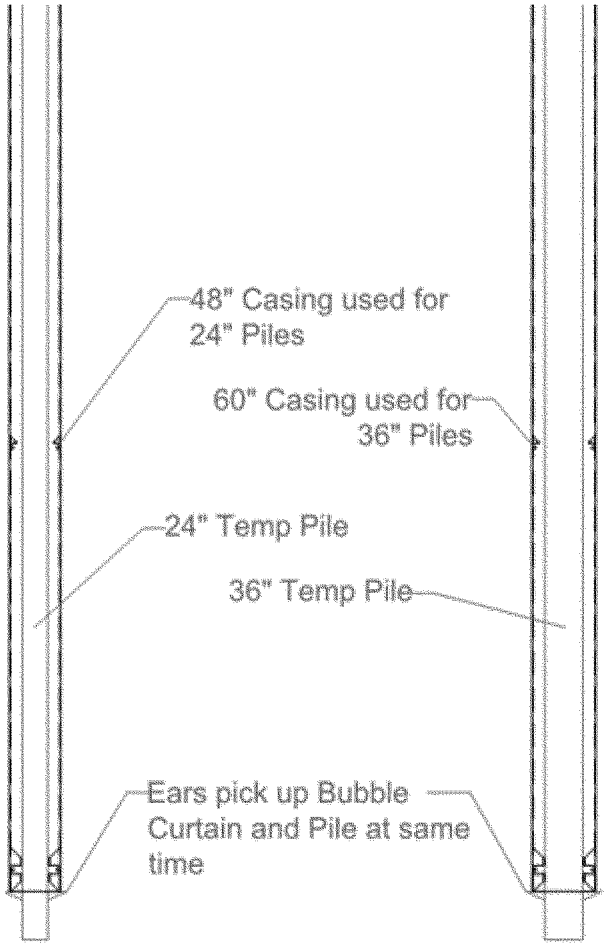

Figure 1. Diagram of temporary pile and confinement system, demonstrating concentric arrangement that can be lifted and dropped onto the seafloor together.

The 48-in piles are much heavier and longer than the 24- and 36-in piles; therefore, the method of lofting the 48-in piles and concentric confinement casing together is not feasible. The 48-in piles in Phase 1 will be fitted with a 72-in diameter confinement casing. The confinement casing with installed bubble curtain hardware will be lofted through a template to the sea floor and then will be driven to a nominal depth of 10 feet using vibratory methods.

To install the casing piles when driving the 48-in piles, a vibratory hammer may be used. However, this would occur for a very limited amount of time (one to three minutes per confinement casing) with a total maximum time of less than four hours during Phase 1 (April through November). This is a very short duration of unattenuated vibratory sound in contrast to the estimated 129 hours of impact driving using this noise attenuation system, which is expected to be highly effective. Use of a vibratory hammer is necessary in order to stabilize the pile using the sea floor embedment and the template, so that the confinement casing can be released from the crane without endangering personnel or property. Once the confinement casing is in place, the permanent pile will be lofted through the casing and allowed to self-weight into the sea floor. The bubble curtain will be activated and then the permanent pile will be driven using impact methods (or vibratory methods in cases of pile driving difficulties or obstructions as discussed elsewhere in the work description). After driving to depth, the confinement casing will be lifted off of the pile. This will not require vibratory energy to remove because of the shallow embedment. Figure 2 illustrates the arrangement for installation of the permanent piles and confinement system.

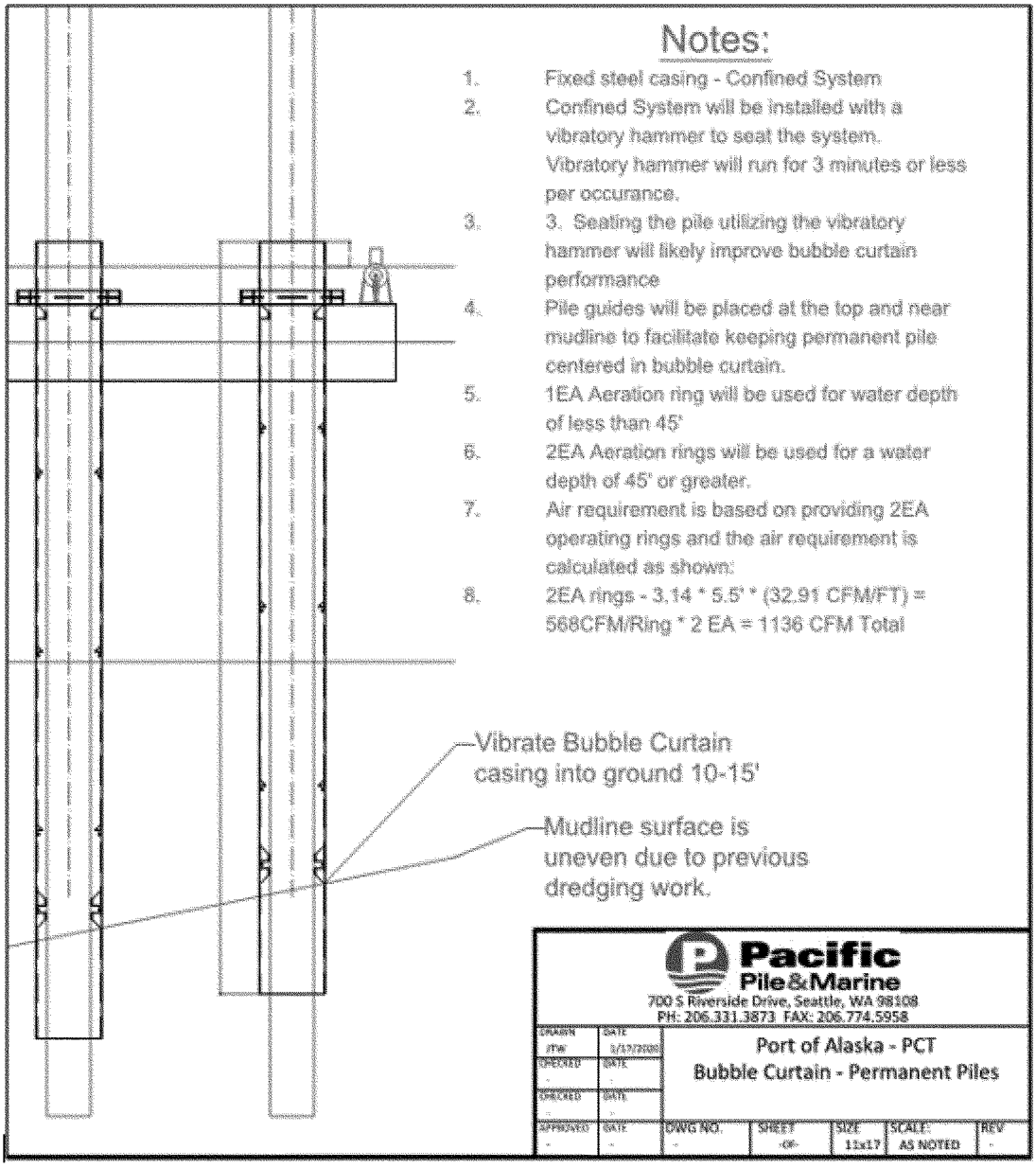

Figure 2. Diagram of pile and confinement system for the 48-in piles, showing arrangement requiring vibratory installation of confinement and separate advancement of pile.

A certain number of the 48-in piles will require a short duration re-strike pile driving event to prove pile axial capacity (or the maximum load which the pile can carry without failure or excessive settlement of the ground). This is planned for up to seven events. For these events the confinement casing will be lowered over the permanent pile and allowed to self-weight into the sea floor sediments; the bubble curtain will be activated and then the pile re-struck with the impact hammer. Once the axial capacity is determined, the confinement casing will be lifted off of the pile. During restrikes, the confinement casing doesn't need to be vibratory hammered in because the permanent pile will provide a safe condition since the bubble curtain sleeve can be set onto the rigidity of the permanently installed 48-in pile. The sleeve will not need to be free standing as in the case of initial installation.

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

Changes From Proposed to Final

As described above, the POA has made some modifications to the work plan (*e.g.,* confined bubble curtain and all plumb piles for Phase 1); however, we have determined that our original acoustic assessment, as described in the notice of proposed IHAs remains an accurate approach to estimate potential impacts to marine mammals and their habitat, with the exception of impact driving 48-in piles, for which we have adjusted the Level B harassment zone from 629 m to 824 m based on data contained within Austin et al. (2016).

This is a conservative approach as the confined bubble curtain will likely further reduce noise propagation beyond that measured with the bubble curtains used during the TPP (Austin et al., 2016). We also note that this change does not affect our take numbers because our estimate does not rely on the size of the Level B harassment zones for any species (see Estimated Take section). Finally, as described in the notice of proposed IHAs, hydroacoustic monitoring will commence at the onset of pile driving; therefore, any shutdown and monitoring zones may be adjusted promptly after the initial interim report.

NMFS also corrected an error in the take table for humpback whales. The text in the notice of proposed IHAs indicated we were authorizing 5 humpback whale takes in Phase 2 (75 days x 1 whale every 16 days), but we mistakenly indicated a total of six humpback whales in the take table. The take tables have been adjusted in both this final notice and the Phase 2 IHA.

Finally, NMFS has clarified some of the mitigation measures in the final IHAs, and the POA will now employ a fourth monitoring station at Ship Creek to further ensure marine mammal detections. In addition, if POA is conducting non-PCT-related in-water work that includes PSOs, the PCT 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. The POA has also updated its hydroacoustic monitoring plan to include more specific goals relevant to the project (*e.g.,* removed bubble curtain effectiveness tests and refined locations of hydrophones and sampling methods), and NMFS is requiring all in-water work occurring in the area during PCT hydroacoustic monitoring (*e.g.,* dredging, other in-water work at the POA, vessel transit) to be documented (*e.g.,* type of activity, location relative to recordings, date/time) and reported in the acoustic monitoring report.

Comments and Responses

A notice of NMFS' proposal to issue two successive IHAs to POA was published in the **Federal Register** on December 30, 2019 (84 FR 72154). That notice described, in detail, POA's proposed activity, the marine mammal species that may be affected by the activity, the anticipated effects on marine mammals and their habitat, proposed amount and manner of take, and proposed mitigation, monitoring and reporting measures. During the 30-day public comment period, NMFS received comment letters from the Marine Mammal Commission (Commission) and the Center for Biological Diversity (CBD). A summary of each comment and our full response is provided here. Full comments have been posted online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.* Please see the comment letters for full detail of the comments and underlying justification.

We note that the Defenders of Wildlife (Defenders) submitted comments to NMFS on February 21, 2020, approximately 3 weeks after the close of the comment period. Although NMFS is not obligated to consider comments submitted following the close of the comment period, we reviewed the letter for pertinent information. Defenders questioned our negligible impact and small numbers findings; however, we have addressed similar concerns in our response to comments from the Commission and CBD. We have also updated the EA so that it accurately reflects our impact and take estimate analysis described in the IHAs (*e.g.,* consideration of group size in beluga whale take estimates) and provides a more comprehensive cumulative impact section. Overall, the Defenders letter does not provide information that leads us to change our analysis or findings and we do not address the comments individually here.

Comment 1: The Commission recommends that, in the **Federal Register** notice for POA's authorization, if issued, and all future **Federal Register** notices involving the taking of species that also are hunted for subsistence purposes, NMFS (1) include the standard verbiage regarding the definitions of unmitigable adverse impact under NMFS's implementing regulations; (2) specify whether the proposed activities overlap in time and space with known hunting activities, whether the local Native Alaskan communities that hunt marine mammals were contacted, whether any concerns were conveyed, whether additional mitigation measures are necessary, and whether a Plan of Cooperation (POC) is being or was developed; and (3) if a POC is necessary, ensure that it contains all of the relevant information.

Response: NMFS has included the standard definition of unmitigable adverse impact, as suggested by the Commission. The information regarding subsistence use for each affected species was contained within the notice of proposed IHAs, specifically noting which species are not hunted (*i.e.,* Cook Inlet beluga whale (CIBW), humpback whales, killer whales, and harbor porpoise) and which are taken by subsistence hunters (*i.e.,* harbor seals, Steller sea lions)—see Description of Marine Mammals and Their Habitat section in that notice. In addition to the information in the *Proposed Mitigation* section of the proposed notice (including background on how mitigation for subsistence use is a consideration), we included an evaluation of how we reached our determination in the Unmitigable Adverse Impact Analysis and Determination section. We have included additional information to more clearly relate the information in the Description of Marine Mammals and Their Habitat section with our determinations in this final notice of issuance; however, our findings remain the same. Regarding time and space overlap of subsistence hunts with the activity, Cook Inlet subsistence activities that may overlap with the POA activities were described in the *Description of Marine Mammals in the Area of Specified Activities* section of the **Federal Register** notice of proposed IHAs (84 FR 72161, December 30, 2019) and we refer the reader to that information.

The Commission also recommended we include information about whether local Native Alaskan communities that hunt marine mammals were contacted, any concerns were conveyed, whether a Plan of Cooperation (POC) was being developed and whether additional mitigation measures are necessary. For this project, on January 9, 2020, the POA informed NMFS that they sent a letter to 14 tribes informing them of the public comment period on the proposed IHAs. No tribal comments were received. No POC was necessary or developed for this action.

Comment 2: The Commission provided the following comments related to the issuance of incidental take authorizations in Cook Inlet where take of beluga whales is proposed for authorization. These are (1) NMFS defer issuance of the final incidental harassment authorizations to POA or any other applicant proposing to conduct sound-producing activities in Cook Inlet until NMFS 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; (2) NMFS defer issuance of POA's final incidental harassment authorizations until all activities for which incidental take authorizations or regulations have been or are expected to be issued are considered with respect to their anticipated, cumulative take of Cook Inlet beluga whales, as part of a

PEIS; and (3) Given the number of sound-producing activities expected to occur in Cook Inlet and the potential impact of such activities on beluga whales, the Commission also reiterates its recommendation that NMFS establish annual limits on the total number and types of takes that are authorized for all sound-producing activities in Cook Inlet before issuing the final authorizations.

Response: 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. Moreover, NMFS has required rigorous mitigation and monitoring measures in the IHAs to reduce impacts to CIBWs, including use of a bubble curtain, shutdown at the Level B harassment zone if pile driving is occurring, and establishing a pre-pile driving clearance zone (*i.e.,* the area must be clear before pile driving commences) that essentially encompasses all of lower Knik Arm and beyond into upper Cook Inlet. These noise attenuation devices and CIBW shutdown measures are more restrictive than the standard shutdown measures typically applied. These measures are expected to reduce both the scope and severity of potential harassment takes by transmitting less noise into the marine environment and reducing the potential for exposure above harassment thresholds. In addition to the mitigation measures, the POA will monitor from elevated platforms at four 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.

Further, as described in the **Federal Register** notice of proposed IHAs (84 FR 72154, December 30, 2019), 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 beluga whales have abandoned foraging in Knik Arm due to pile driving noise or exposure to pile driving noise has resulted in more than a negligible impact to the CIBW population. In light of the mitigation and monitoring measures and scientific data to date, we anticipate the impacts of any 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 has a reasonable basis for determining that authorizing take incidental to the PCT project will not contribute to or exacerbate the stock's decline. Additionally, the ESA Biological Opinion determined that the issuance of the IHAs is not likely to jeopardize the continued existence of the CIBWs or destroy or adversely modify CIBW critical habitat.

The cumulative effects of the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions (as well as the effects of climate change) were evaluated against the appropriate resources and regulatory baselines in our final Environmental Assessment (EA) for the issuance of the IHAs to the POA (available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*). The best available science and a comprehensive review of past, present, and reasonably foreseeable actions (including other noise-generating activities such as other construction projects and oil and gas exploration in Cook Inlet) was used to develop the Cumulative Impacts analysis. This analysis is contained in Chapter 4 of the aforementioned EA. As required under NEPA, the level and scope of the analysis is commensurate with the scope of potential impacts of the action and the extent and character of the potentially impacted resources, as reflected in the resource-specific discussions in Chapter 3 (Affected Environment) of the EA. Past and present actions are also included in the analytical process as part of the affected environmental baseline conditions presented in Chapter 3 of the EA, in accordance with 1997 Council on Environmental Quality (CEQ) guidance. Per the guidance, a qualitative approach and best professional judgment are appropriate where precise measurements are not available. Where precise measurements and/or methodologies were available they were used. Therefore, NMFS has analyzed the cumulative effects of the action on CIBWs (as recommended by the Commission) which supports a Finding of No Significant Impact (FONSI). Therefore, an EIS is not required.

We do recognize, however, that NMFS previously declared its intent to prepare an EIS to address MMPA Incidental Take Authorizations (ITAs) 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 (for any type of activities), or anticipated requests, notably 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 necessary. Nonetheless, as described above, 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 two successive IHAs to POA for the PCT project, which supports our finding that NMFS' issuance of the POA IHAs will not have a significant impact on the human environment.

With respect to capping the number of takes authorized across all activities, the MMPA states that, upon request, NMFS shall authorize, for periods of not more than one year, the incidental taking by harassment of small numbers of marine mammals if NMFS finds that such harassment during each period concerned will have a negligible impact on such species or stocks and will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence uses. Section 101(a)(5)(A) of the MMPA addresses the analysis and authorization of take from a ''specified activity'' and, 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 incidental

take authorization. Further, NMFS here has factored into its negligible impact analyses 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 relevant stressors (such as incidental mortality in commercial fisheries, UMEs, and subsistence hunting)). See the *Negligible Impact Analyses and Determinations* section of this notice of issuance.

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 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.

As described above, this does not mean the cumulative impacts of other actions are not considered, as we have captured past and current actions in our baseline under the MMPA and all past, present and reasonably foreseeable future actions under NEPA. Finally, the reasonably foreseeable cumulative effects to ESA-listed species, including CIBWs, from other activities are considered in the analyses conducted in the biological opinion per the ESA. The biological opinion, issued March 23, 2020 found NMFS' issuance of the IHAs to POA would not jeopardize the continued existence of CIBWs or destroy or adversely modify their critical habitat. For these reasons, we have not implemented the Commission's recommendation to cap the number of authorized takes of CIBWs across all activities for which take is requested.

Comment 3: The Commission recommends that, until such time that POA conducts hydroacoustic monitoring to confirm the extents of the Level A and B harassment zones, NMFS (1) use 1,174 m rather than 629 m for the Level B harassment zone during attenuated impact pile driving of 48-in piles and 3,502 rather than 2,247 m during attenuated vibratory pile driving of 48-in piles based on the extents of the Level B harassment zones presented in Tables 12 and 13, respectively, of Austin et al. (2016), (2) re-estimate the Level A harassment zones during attenuated impact installation of 48-in piles based on the attenuated source level of 190 dB re 1 µPa at 10 m and 15 log R and during attenuated vibratory installation of 48-in piles based on the attenuated source level of 159.5 dB re 1 µPa at 10 m and 14.67 log R, and (3) re-estimate the Level A and B harassment zones during attenuated impact and vibratory impact installation of 24-, 36-, and 144-in piles based on the unattenuated source levels in Table 2 and 6 of the **Federal Register** notice, if it intends to use the unattenuated propagation loss factors presented in the notice.

Response: Austin et al. (2016, Table 12) provided estimated median ranges to the 160 dB rms isopleth during installation of 48-in piles using a bubble curtain by applying best-fit transmission loss (TL) coefficients. It is important to note these distances were modeled from data collected at 10 m and 1,000 m and were not measured at exactly those locations. The estimated median distances to the 160 dB isopleth (which NMFS uses as a Level B harassment threshold for impact pile driving) for four piles ranged from 578 m to 1100 m for an average median distance of 824 m. The notice of proposed IHAs used an approach that estimated the distance to the 160 dB isopleth at 629 m as a result of applying unattenuated source levels with an assumed effective attenuation of 7 dB due to use of an unconfined bubble curtain. Since issuance of the notice of proposed IHAs, the POA is now going to deploy a confined bubble curtain (as described above) on all piles in water depths suitable for a bubble curtain in Phase 1 which is expected to further increase sound attenuation. The casing sleeve pile is a solid steel pile with interior cushions or air pockets. This sleeve surrounds the bubble curtain and will be embedded in sediment several feet. This design is anticipated to further reduce both water and sediment-born sound propagation into the marine environment. Despite use of this system, we agree with the Commission that using the bubble curtain pile data is more appropriate to estimate the initial distances to harassment isopleths (which will then be verified *in situ*). However, in lieu of the Commission's recommended approach of using a practical spreading loss model to a lower source level, we have relied on the data directly presented in Austin et al. (2016) and have therefore adjusted the Level B harassment zone for 48-in piles to 824 m during impact pile driving.

For vibratory driving and removal, we have determined that adjustments at this stage are not necessary. Blackwell (2005) reported a drop-off rate of 22 dB to 29 dB per doubling of distance for vibratory pile driving. URS (2007) applied a 25 dB drop-off to vibratory sheet pile driving at the POA for a distance to the 120dB isopleth of 800 m. The source levels for driving 24-in and 36-in piles are estimated to be similar as those measured during sheet pile driving (154–171 dB for the PCT vs 168 dB during sheet pile driving). While we have applied a 122.2 dB Level B harassment threshold, our estimated distances using the approach in the notice of proposed IHAs exceeds those estimated during sheet pile installation. The Level B harassment isopleths estimated for vibratory driving 24 to 48-in piles with similar source levels as the sheet pile project far exceed 800 m (846–2,247m). The distance to Level B harassment isopleth for vibratory driving 144-in piles is over 9 kms. No changes are necessary for 144-in piles since not only will there be minimal use of the vibratory hammer (one pile), *in situ* acoustic data from Phase 1 will be used to estimate transmission loss rates, assisting in the verification of analysis for Phase 2. Therefore, we find no adjustments the Level B harassment zone during vibratory driving are necessary at this time.

For similar reasons, it is also not necessary to recalculate Level A harassment zones. The Commission is correct that the median source level for impact hammer is 190 dB; however, this is a sound pressure level (SPL) of 190 dB rms (Table 16 in Austin et al. 2016). For Level A harassment calculations we apply sound exposure levels (SEL) values. In our analysis, the estimated sound pressure level (SPL) is 193 dB rms and 180 dB SEL. To be conservative, we maintain the higher source level than that recommended by the Commission. Again, during Phase 1, the bubble curtain will be encased by a casing pile, further attenuating noise. The acoustic monitoring plan is designed to measure both source levels (near-field) and far field received levels; therefore, zones can be adjusted accordingly. Finally, the Level A zones represent the distance at which an animal would have to remain during the duration of driving or removing the number of piles considered in the analysis. This is already a conservative approach and for the reasons listed above, there is no need to adjust Level A harassment zones.

More important than estimating harassment zones is the fact that these zones (which, for CIBWs, equate to shutdown zones) may very well be adjusted at the onset of pile driving once the initial interim acoustic monitoring report is reviewed by NMFS. Again, harassment zones do not influence take numbers for any marine mammal species; therefore, the number of takes estimated or authorized would not change. There are multiple ways to model noise levels (as demonstrated by the various approaches from the POA, the Commission, and NMFS' approach) with no single method necessarily being more accurate than others, especially given the complex acoustic environment in Knik Arm. While data to date demonstrate our acoustic analysis provides an adequate and realistic estimate, a major goal in the hydroacoustic monitoring plan is to refine these zones as soon as possible with real data. The Commission agrees with us on this when they state elsewhere in their letter that the extents of the larger Level A harassment zones and the Level B harassment zones are best measured *in-situ.* As was described in the notice of proposed IHAs, POA will begin conducting acoustic monitoring at the onset of pile driving (in April when beluga whale presence is scarce) and will provide an interim report to NMFS within 10 days for 24 to 48-in piles and 72 hours for 144-in piles. The hydroacoustic monitoring plan made available for public comment in association with the notice of proposed IHAs indicated that measurements would be taken at various distances representing both near-field source levels and far-field received levels. These far-field distances ranged from 300m–1 km (where the majority of impact pile driving harassment isopleths have been estimated) and 3km+. Therefore, distances to the Level B harassment isopleth will indeed be identified. Therefore, while we appreciate the Commission's recommendations, at this time we find our acoustic analysis is appropriate with the exception of slight adjustments to the 48-in pile Level B harassment zone. NMFS will adjust all Level A harassment and Level B harassment isopleths, if appropriate, based on the new, more relevant hydroacoustic data collected as POA installs piles with a confined bubble curtain. For Phase 2, it is still currently unknown if a confined or unconfined bubble curtain will be used. Because our analysis reflects previously collected data, we do not find any adjustments to Phase 2 zones are necessary at this time. Again, the POA will conduct hydroacoustic monitoring at the onset of pile driving during both Phase 1 and Phase 2 and Level A harassment and Level B harassment isopleths will be refined with in situ data. Finally, any adjustments to the harassment zones do not change any take numbers for any marine mammal species as take estimates are not based on the size of the harassment zones (*e.g.,* CIBW takes are based on sighting rates (whale per hour) throughout Knik Arm and other species take estimates are based on presence/absence regardless of zone size).

Comment 4: The Commission recommends that NMFS refrain from using the 7–dB source level reduction in these authorizations and all future proposed incidental take authorizations, and recommends that NMFS consult with the relevant experts regarding the appropriate source level reduction factor to use to minimize far-field effects on marine mammals for all relevant incidental take authorizations and, until the experts have been consulted, refrain from using a source level reduction factor when bubble curtains are to be implemented.

Response: The use of a confined bubble curtain provides further justification for use of the 7dB reduction to source levels as proposed in the notice of proposed IHAs. Not only will the bubbles be confined but the pile will be set several feet into the substrate. In its comments, the Commission asserted that the bubble curtain deployed during the 2016 TPP project was not effective. However, the bubble curtain resulted in reduced source levels during testing of the TPP (see Table 12 in Austin et al. 2016). For example, the POA measured source levels during installation of 48-in piles that were unattenuated and were installed with bubble curtains; source levels were consistently equal to or greater than 7–dB less when bubble curtains were applied with the exception of one pile where the bubble curtain was turned on and off (versus comparing piles with and without bubble curtains).

Overall, the Commission has made this comment on previous IHAs and NMFS has responded accordingly. For example, we refer the reader to our previous, more general response in our notice of issuance of a previous IHA (84 FR 64483, November 29, 2019). Finally, as described above, *in situ* measurements will be taken upon the onset of pile driving and harassment zones will be adjusted accordingly. At this time, the existing data support the accuracy of our analysis.

Comment 5: The Commission recommends that in the **Federal Register** notice for POA's authorizations, if issued, and the final authorizations, NMFS: (1) (a) Fix select issues regarding inconsistencies and errors in Tables 1–2, 2, 6, 7, and 8 of the **Federal Register** notice for unattenuated and attenuated vibratory installation of 24-in piles, unattenuated impact installation of 24-in piles, and attenuated vibratory installation of 48-in piles, and (b) ensure that all of the Level A and B harassment zones, along with the shut-down and monitoring zones, are correct based on all the various assumptions; and (2) use 209.5 rather than 202 dB re 1 μPa at 10 m as the assumed source level for attenuated impact installation of 144-in piles and increase the Level B harassment zone from 1,945 to 4,984 m.

Response: NMFS has clarified Table 7 to reflect Table 1–2. Despite multiple hammers working at once, no more than the number of piles represented in Table 7 would be installed on any given day. The maximum amount of piles installed on any given day is four. We have also updated the amount of time of vibratory driving per pile to reflect the maximum amount of time estimated by the POA (*i.e.,* 75 minutes instead of the 100 minutes in the notice of proposed IHAs). We note that these minor changes are insignificant in that all vibratory driving results in very small harassment zones for all hearing groups and all are less than the 100 m shutdown requirement.

NMFS notes the other items that the Commission asserts to be errors or inconsistencies are actually correct and no adjustments are necessary. The Commission noted differences between Tables 1–2 and 7 for the amount of 48-in piles driven by a vibratory hammer in one day (one pile versus the 1–3 piles for impact hammering) and claims we have thus underestimated noise levels. However, the Commission mistakenly assumed equal distribution between impact and vibratory pile driving 48-in piles. As noted in the POA's application and NMFS' notice of proposed IHAs, the POA anticipates using the vibratory hammer sparingly during installation of permanent piles. That is, the one to three 48-in piles per day installed with an impact hammer reflected in Table 1–2 and one pile per day for vibratory installation in Table 7 are both correct. Hence, the resulting Level A harassment isopleths (Table 8) are also correct. In addition, all 24-in piles except six in Phase 2 will be driven using the bubble curtain.

As for the assumed source level and estimated Level B harassment distance

for impact driving 144-in piles, NMFS' original analysis is accurate. The Commission suggests we should use an unattenuated source level to estimate distance to the Level B harassment zone. However, the 144-in piles would be installed using a bubble curtain and, therefore, we disagree with the Commission that the unattenuated source level is appropriate. Regarding what the starting source level should be, we find the Commission's concern regarding a 0.5 dB difference in source level is non-substantive when considering source variability and model regressions. Further, the first installation of a 144-in pile will be accompanied by acoustic monitoring in both the near and far-field. An interim report will be sent to NMFS within 72 hours and zones will be adjusted accordingly, if warranted. Again, we note the amount of take and pre-pile driving clearance zones are unaffected by any changes recommended by the Commission.

NMFS acknowledges a typographical error in Table 7 that indicates the source levels for 48-in piles is 171 dB rms when it should reflect 161 dB rms, as correctly indicated elsewhere in the notice of proposed IHAs (and as provided in the POA's application and Austin et al. 2016). We have also corrected Table 6 and 7 to reflect that only up to 4 24-in piles could be driven on any given day. We note these differences result in minor differences in Level A harassment zones and the 100 m shutdown zone remains appropriate.

Comment 6: The Commission recommends that NMFS continue to make the 24-hour Level A harassment approach a priority to resolve in the near future and consider incorporating animat modeling into its user spreadsheet.

Response: NMFS has previously informed the Commission of its efforts to develop a method for more accurately assessing the potential for Level A harassment from acoustic sources such as pile driving. NMFS is continuing that effort.

Comment 7: The Commission agrees that NMFS's assumption to reduce the number of takes based on the maximum percentage of beluga whales previously taken at the POA is justifiable, but questions the underlying take estimates. The Commission recommends that NMFS revise its take estimates based on the maximum density estimate in the project area of 0.236 whales/km^2 from Goetz et al. (2012), the revised ensonified areas based on the Commission's recommendations herein, the numbers of days of the various activities from Table 6–2 in POA's application, and an assumed maximum take rate of 59 percent based on Table 10 of the notice of proposed IHAs. If the number of revised beluga whale takes during either Phase 1 or 2 exceeds NMFS's assumed one third of the population estimate (83 FR 63376), the Commission recommends that NMFS deny the authorization(s) outright.

Response: NMFS provided its rationale in the notice of proposed IHAs for why the Goetz et al. (2012) data was not applied to estimate CIBW take, and that rationale remains appropriate. We do not agree our method underestimates take and are confident it more accurately reflects expected take than the Commission's approach. The Commission asserts NMFS used sightings rates that have no spatial dimension and are not applicable for species that routinely occur in the project area and for activities with larger ensonified areas than were observed during POA's 2016 monitoring efforts. We strongly disagree. The sighting rate of CIBWs is derived from scientific monitoring spanning several years (Kendell and Cornick 2015). The data set covers all months the POA would be conducting pile driving over several years and is based on all animals observed during scientific monitoring regardless of distance (the authors did not report sighting distances but were equipped with 7 x 50 binoculars and theodolites). Therefore, the take calculation inherently assumes any CIBW within lower Knik Arm could be taken during pile driving. This will not be the case, given the impact pile driving harassment zones are much smaller than the width of Knik Arm. As described previously and in our notice of proposed IHAs, harassment areas are not used to estimate take for any marine mammal species for this project. More importantly, the Commission fails to recognize the mitigation measures prescribed by NMFS are more stringent than those in any previous incidental take authorization issued to the POA and are designed to avoid all take of CIBWs. However, we have authorized some take as a precaution. The amount of take authorized in each IHA is no more than 20 percent of the population. In summary, the Commission does not provide sufficient reason why using a single density estimate from June aerial surveys is more accurate than using several years of scientific monitoring data, spanning all months in which the POA would be working, and which considers all whales observed. We have maintained both our CIBW take method and take amount in the final IHAs.

Comment 8: The Commission recommends that NMFS increase the numbers of total harbor seal takes from 1,016 to at least 1,566 takes during Phase 1 and from 600 to at least 999 takes during Phase 2, if NMFS does not revise the extent of the Level B harassment zone for vibratory installation of 144-in piles based on the Commission's recommendation, or to at least 1,863 seals if it does. They then recommended NMFS reduce the total Level B harassment takes in Phase 1 and 2 by 30 percent to account for Level A harassment takes.

Response: First, we note the POA allows for the installation of only one of the nine 144-in piles by vibratory pile driving; therefore, this activity is extremely limited in time. NMFS agrees with the Commission that the maximum number of harbor seals on any given day observed during the TPP was 9 seals. The Commission assumes equal abundance at greater distances and suggests we double that number when vibratory pile driving Level B harassment zones extend beyond 2km (since all harbor seal sightings were within 2kms, likely due to sightability). We believe the Commission's approach is overly conservative as it uses maximum abundance throughout the construction season despite data indicating no harbor seals were observed from August through November 2005–2007. More importantly, it does not consider that over 8 years of data spanning April through November, a maximum of 57 total harbor seals (range 0–57) were observed in any given year and that both scientific and construction monitoring typically covered the entire construction season. For example, in 2009, construction monitoring efforts spanned 209 days from March through December and over 3,322 hours. During that time, only 34 harbor seals were observed. Therefore, the Commission's suggestion that 1,016 harbor seal takes in Phase 1 and 600 harbor seal takes in Phase 2 is not adequate is not justified by the years of previous monitoring data. For these reasons, we maintain our original harbor seal take estimates and have authorized those takes.

Comment 9: The Commission recommends that NMFS re-estimate the numbers of Level A and B harassment takes for harbor porpoises and humpback whales based on 50 percent of the takes being Level A harassment, which would result in 32 Level A harassment and 32 Level B harassment takes of harbor porpoises and 4 Level A harassment and 4 Level B harassment takes of humpback whales.

Response: Similar to the harbor seal take recommendation, the Commission fails to consider observation data and also does not consider context around the outputs of the user spreadsheet. Humpback whales and harbor porpoise are rarely observed in upper Cook Inlet and are not expected to remain for any meaningful duration. Therefore, we maintain that the estimates of Level A harassment and Level B harassment takes in our notice of the proposed IHAs are accurate representations of the likely potential occurrences of Level A harassment and Level B harassment.

Comment 10: The Commission recommends that in the **Federal Register** notice for POA's authorizations, if issued, and the final authorizations, NMFS: (1) Specify a clearance time of 30 rather than 15 minutes for beluga whales; (2) specify that delay procedures must be implemented if a beluga whale is observed (a)(i) within 1 km of the mouth of Knik Arm to the south and Green Lake Creek to the north during all activities except vibratory installation and removal of 144-in piles and (ii) within 2 km of the mouth of Knik Arm to the south and Mule Creek to the north during vibratory installation and removal of 144-in piles and (b) activities cannot commence until the whale has moved at least 100 m beyond the Level B harassment zone and is transiting away from the zone; (3) include the measures for bubble curtain performance standards; (4) include the requirement that pile driving and removal can occur only during daylight hours; (5) specify the number of each pile size and installation method that would be monitored acoustically; (6) include the requirement that POA must include in the draft and final hydroacoustic monitoring reports the (a) substrate type(s), (b) number of strikes per pile or strikes per day and pulse durations associated with impact pile driving, (c) spectra for all pile sizes, installation methods, and with and without the bubble curtain, and (d) amount of time the bubble curtain was turned on and off; (7) include the requirements for POA to extrapolate Level A and B harassment takes to the unobserved portions of the Level A and B harassment zones and to include the raw PSO sightings datasheets in the draft and final marine mammal monitoring reports; and (8) require POA to alert NMFS when the total number of takes, including observed and extrapolated takes, for any species reaches 80 percent of those authorized per year.

Response: NMFS has reviewed the Commission's specific suggestions. First, we note, as described above, the bubble curtain will not be turned on and off; therefore, those comments do not apply. We address the other recommendations in order: (1) The clearance time is 30 minutes; (2) NMFS has delineated both inbound and outbound clearance zones (see Figure 1 in the IHAs) and included the Commission's recommended language that activities cannot commence until the whale has moved at least 100 m beyond the Level B harassment zone and is moving away from the zone; (3) the confined and unconfined bubble curtain measures, which are included in in the IHAs, reflect those previously established by the USFWS and NMFS; (4) as described in POA's application and notice of proposed IHAs, the IHAs now specifically include the measure that pile driving may only be conducted during daylight hours; (5 and 6) the hydroacoustic monitoring plan identifies the number of piles to be monitored while the IHAs contain specific reporting requirements including strikes per pile, pulse duration, and spectra; (7) the requirements to report extrapolated takes was contained within the proposed IHAs and NMFS has added the requirement that POA must submit data sheets; and (8) because pile driving cannot be conducted if the Level B harassment zone is not visible, then the need to extrapolate takes is not applicable to Phase 1. In Phase 2, vibratory driving of 144-in piles would only occur if impact driving is not successful (which is conservatively estimated for one of the nine piles). In such case, the POA would extrapolate takes of marine mammals for the portion of Level B harassment zone that is not able to be observed. The requirement for reporting to NMFS when 80 percent of CIBW take was reached was contained within the notice of proposed IHAs and the draft IHAs and we maintain that measure for the final IHAs. The Commission suggested this should be applied to all marine mammals, without providing justification. The only other marine mammal species with some reasonable level of occurrence is the harbor seal. NMFS has conservatively authorized take for this species that is 10 to 17 times the amount of take expected based on previous monitoring data. NMFS does not adopt the recommendation to require the POA report to NMFS when takes are 80 percent of all marine mammals.

Comment 11: The Commission recommends that NMFS remove measure 4(g) from the 2020 final authorization and include the Level A harassment zones in both final authorizations.

Response: NMFS concurs and has adopted the recommendations.

Comment 12: The Commission recommends that NMFS include in the final authorizations a requirement that POA provide the Level A and B harassment zones measured in-situ for each pile size rather than just the source levels and if the Level A or B harassment zones exceed those included in the final authorization, either (1) increase the Level A and B harassment zones accordingly or (2) require POA to implement an additional sound attenuation device and verify that the resulting Level A and B harassment zones are equal to or less than those included in the final authorization.

Response: The hydroacoustic monitoring plan is designed to more accurately verify harassment zones. We have included a requirement in the IHAs to report estimated harassment zones based on acoustic measurements. Condition 4(f) of the draft IHAs indicated NMFS may adjust the zones accordingly. While the Commission's comment only addressed whether the zones are larger than expected, it is also possible that the zones will in fact be smaller, especially in light of the application of a confined bubble curtain. In the unlikely case the zones are larger than estimated, NMFS will not require additional noise attenuation, but instead will adjust shutdown and monitoring zones accordingly.

Comment 13: The Commission recommends that NMFS ensure that POA (1) is aware that the number of piles of each pile size that are to be monitored must actually be driven to depth and sound levels associated with piles installed at a level of refusal are not appropriate and do not count toward the numbers of piles to be monitored and (2) conducts measurements during the installation of the entire pile rather than just a portion of the installation (*e.g.,* 5 of 60 minutes).

Response: The POA has submitted an updated hydroacoustic monitoring plan based on both comments from the public and NMFS' acoustic experts. Nowhere in the POA's original plan did it indicate noise levels only associated with the level of refusal would be used or that measurements would only be made for 5 of 60 minutes. Regardless, the POA has clarified in its updated plan that measurements will be made during the entirety of pile driving any given pile.

Comment 14: The Commission commented that if POA intends to determine the effectiveness of the bubble curtain (or other sound

attenuation device), the Commission recommends that NMFS advise POA to (1) conduct measurements during vibratory installation of two 24- and two 36-in piles and impact installation of two 48-in piles and two 144-in piles with and without the bubble curtain, (2) alternate whether the bubble curtain is on or off when pile driving begins for each pile size, if POA still plans to turn the bubble curtain on and off for the same pile, and (3) ensure that the bubbles are dissipated fully before making measurements with the bubble curtain turned off.

Response: The purpose of testing effectiveness of a bubble curtain would be to determine how much noise reduction the bubble curtain is achieving. Data such as these can help inform future management actions. However, NMFS believes that testing the effectiveness of the bubble curtain by either turning it on or off or installing piles without a bubble curtain is not warranted and would result in unnecessarily high noise levels, further disturbing marine mammals. We note that during Phase 1, the bubble curtain would be confined and NMFS is also not requiring the POA to test the effectiveness of this design. The POA will; however, conduct both sound source verification measurements (approximately 10 m from the pile) and far-field acoustic measurements to determine what the actual noise levels generated from the activity will be. The acoustic monitoring data will verify if the actual source levels and received levels are within the bounds estimated in our analysis. Therefore, we find the Commission's experimental design of installing piles with and without bubble curtains is not warranted and could result in greater impacts to marine mammals.

Comment 15: The Commission recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated **Federal Register** notice process. The Commission recommends that NMFS ensure that the current renewal terms and conditions are included in section 8(a) of the final authorization, if issued and notwithstanding the Commission's recommendation to refrain from issuing renewals. The Commission further suggested that if NMFS chooses to continue proposing to issue renewals, the Commission recommends that it (1) stipulate that a renewal is a one-time opportunity (a) in all **Federal Register** notices requesting comments on the possibility of a renewal, (b) on its web page detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, justify why it will not do so in its **Federal Register** notices, on its web page, and in all draft and final authorizations.

Response: NMFS does not agree with the Commission and, therefore, does not adopt the Commission's recommendation. NMFS will provide a detailed explanation to the Commission of its decision within 120 days, as required by section 202(d) of the MMPA.

Comment 16: The Commission recommends that NMFS either make its determinations regarding negligible impact, small numbers, and unmitigable adverse impact on subsistence use based on the total number and type of taking for each species or stock for both authorizations combined or delay the Phase 2 activities until 2022 if a renewal authorization is issued for the Phase 1 activities.

Response: The MMPA is clear that NMFS shall authorize, for periods of not more than 1 year, the incidental taking, by harassment, of small numbers of marine mammals if we find that such harassment *during that period concerned* will have a negligible impact on such species or stock and will not have an unmitigable adverse impact on the availability of such species or stock, and the authorization for such activity shall prescribe certain methods and measures.

The POA has indicated to NMFS it is confident that all Phase 1 work will be completed in 2020. If the POA requests a renewal, NMFS will consider all relevant criteria and data collected during 2020 to assess if the renewal is appropriate. We may also modify, suspend, or withdraw any IHA if the holder fails to abide by the conditions prescribed in the IHA, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals (see condition 7 of the IHAs). In any case, should the POA request a renewal of the Phase 1 IHA (again, they have indicated this is unlikely), we will consider our established criteria for issuing a renewal, all data collected, and the potential impacts (both beneficial and adverse) to determine if a renewal is appropriate. Further, we note the Biological Opinion associated with this action limits the amount of take, as defined under the ESA, of CIBWs in any given year to 55 take incidents; therefore, the POA is constrained by this evaluation.

Finally, the Commission asserts that neither a negligible impact nor a small number determination may be able to be made on the authorizations separately, let alone combined. We disagree with the former as we have fully explained our rationale for making both the negligible impact and small numbers findings for each IHA. We have prescribed mitigation and monitoring measures that are the most restrictive of any pile driving IHA issued, as required in this case to meet the MMPA's least practicable adverse impact standard. We have both reduced the amount of noise entering the marine environment (*i.e.,* requiring the POA to use a confined bubble curtain) and reduced the risk of CIBWs being exposed to any noise that may cause harassment (again, the takes authorized are provided for circumstances where a whale enters the harassment zone before pile driving can be shut down). With respect to implementation of the MMPA, the Commission makes an accusation that our process of issuing two successive IHAs is a ''a way to subvert the authorization process under 101(a)(5)(D) of the MMPA and authorize the taking under two separate authorizations that could not be issued under a single authorization.'' This is an incorrect assessment of NMFS' motives for using this approach.

The MMPA clearly states an IHA may not exceed one year. The issuance of successive IHAs allows us to evaluate the project in its entirety and ensure approaches to marine mammal conservation (*e.g.,* mitigation and monitoring measures) are consistent across years, while also allowing for some administrative streamlining, which provides efficient processing of IHAs, allowing resources to be focused on marine mammal conservation and protection. Should any information be identified in Phase 1 that suggests our analysis should be updated, we have both the authority and responsibility to ensure the required findings continue to be met or, as described in condition 7 of the IHAs, we may modify, revoke, or suspend the IHAs. We do note; however, that even if we did consider the total amount of CIBW take over 2 years (n = 90), this is 32.2 percent of the population (279 whales) (if assumed that each incident occurs to a unique individual). Earlier in its letter (see Comment 7), the Commission stated ''*If the number of revised beluga whale takes during either Phase I or II exceeds NMFS's assumed one third [33%] of the population estimate (83 FR 63376) of 327, the Commission recommends that NMFS deny the authorization(s) outright.*'' In summary, NMFS has made our findings relative to each IHA; however, our issuance of two successive

IHAs is both more efficient, effective, and provides consistent conservation value to the species than if we would have received an application for an IHA from the POA in late 2020 for work in 2021.

Comment 17. The Commission recommends that NMFS (1) consult with POA regarding the numerous issues raised in the Commission's letter and direct the applicant to revise the application accordingly and (2) publish revised proposed authorizations prior to issuance of any final authorization or authorizations.

Response: What the Commission claims are ''numerous omissions, inconsistencies, ambiguities, and incorrect information and assumptions identified'' are, for the most part, differences of opinion on how available data should be applied to our analysis and, in each case, we have presented reasons why we disagree with specific recommendations. If we did agree that there actually was an error (*e.g.,* listing 171 dB in Table 7 instead of 161 dB) or the Commission's logic is more appropriate to implement (*e.g.,* use 48-in bubble curtain data to establish initial Level B harassment zones), we have made the recommended changes. We note many of the recommendations by the Commission are detail-oriented and, in NMFS' view, do not provide additional conservation value. NMFS disagrees that the information presented in association with the proposed IHAs was insufficient to facilitate public review and comment, as the Commission implies. Further, in the notice of proposed IHAs, NMFS clearly identified where we did not agree with the POA's analysis in their application and presented alternative approaches which better reflect the best available science. Following receipt of an adequate and complete application, it would be inappropriate for NMFS to demand further revised versions of the application to reflect NMFS' own analysis or additional mitigation prescriptions beyond those that the applicant proposes.

Finally, NMFS has been in constant coordination with the POA to improve upon both the noise attenuation devices and marine mammal and acoustic monitoring plans throughout the IHA process in an effort to minimize impacts of the project on CIBWs to meet MMPA mandates. This notice of issuance describes the benefits realized from those communications and clearly identifies any changes from the proposed IHAs phase. Overall, there are no substantial changes or new information that would lead us to reach any other conclusions regarding the impact to marine mammals. In fact, the addition of a confined bubble curtain and implementation of a fourth monitoring station only strengthens our findings regarding negligible impact and unmitigable adverse impact on subsistence use. For these reasons, NMFS is not republishing a notice of proposed IHAs.

Comment 18: The CBD asserts that NMFS's negligible impact determination is arbitrary and capricious and that the specified activities would have greater than a negligble impact on CIBWs. The CBD suggest (1) NMFS underestimated the impacts of pile driving on CIBWs, (2) there were flaws in take estimate methodology, (3) NMFS should apply the 120dB threshold to all noise sources, (3) the proposed project does not avoid or impose any specific mitigation, (4) NMFS only counts one take exposure per day, but the animals may be exposed as they travel in and out of Knik Arm, (5) in-air noise impacts to seals and sea lions were not addressed and (6) the conclusion that there is no harassment or ship strike potential from vessels is wrong.

Response: For clarity, NMFS' authorization does not ''approve activities''; that permitting responsibility lies with the U.S. Army Corps of Engineers. As described above in response to comments from the Commission, NMFS has not underestimated the impacts of pile driving on marine mammals, there are no flaws in the take estimate methodology, and the IHAs indeed provide extensive mitigation (and is actually some of the most stringent mitigation in any pile driving-related IHA). We do not repeat our reasons why we disagree with CBD here but refer the reader to the relevant responses to the Commission.

We do note CBD appears to have misunderstood the monitoring data when suggesting that 59 percent of takes only occurred in July. In fact, this amount was derived from monitoring occurring from March through December 2009 (20 takes total out of the 34 allocated); the same time over which the POA would be conducting the POA project. It is unclear why CBD suggests monitoring only occurred in July- this is inaccurate and all the monitoring reports were made available on our website during the public comment period. In addition, group size (n=11) was not actually a factor in our final take estimates but a means by which to determine if the total take authorized would allow for the take of larger group sizes. This was fully described in the notice of proposed IHAs but we recognize the draft EA was not updated to reflect this approach. We have since updated the EA to clarify group size was not ultimately used as a correction factor or in take calculations. The CBD also claims we entirely discounted the estimated take but this is also not accurate. We applied a 59 percent correction factor to the calculated take to account for the extensive mitigation measures we prescribe in the IHAs and to reflect the monitoring data.

CBD believes we should apply a 120 dB threshold for Level B harassment based on beluga hearing sensitivity. We disagree. First, 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.

To establish the appropriate Level B harassment threshold in a noisy environment such as upper Cook Inlet, NMFS reviewed data recently collected at the POA. During the 2016 TPP project, the POA conducted ''ambient'' acoustic monitoring, in accordance with accepted methodology for characterizing ambient noise levels. Ambient noise levels (in the absence of pile driving) were 122.2 dB. We described this analysis in our notice of proposed IHAs. Therefore, it is reasonable to establish a 122.2 dB Level B harassment threshold at the POA.

With respect to exposures, nowhere does NMFS indicate that an individual whale could not be exposed upon entering and exiting Knik Arm on a given day. Our take estimates are based on sighting rates regardless of direction or if the whales observed were previously observed that day. Further, the POA would document take for any whale entering the Level B harassment zone as it is nearly impossible to distinguish individuals in the field. Finally, our small numbers determination is based on an assumption that the take estimate represents number of individuals, rather

than instances, which is a conservative assumption. Further, we re-iterate information on page 72182 of our notice of proposed IHAs wherein we described that acoustic data indicate beluga whales move through lower Knik Arm relatively quickly, when entering or exiting the arm, and remain in the upper arm for several days, or weeks, before moving back out into Cook Inlet (Castellote et al., 2020). Satellite telemetry data indicate such a movement pattern may be common. Specifically, a beluga instrumented with a satellite link time/depth recorder entered Knik Arm on August 18th and remained in Eagle Bay until September 12th (Ferrero et al. 2000). Therefore, movement by any given whale in and out of Knik Arm on a single day is not a likely scenario.

Comment 19: CBD postulates that NMFS' small numbers determination is invalid because the amount of take proposed to be authorized is greater than 10 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 authorizations here violate the MMPA because it does not guarantee that only small numbers of CIBWs and the other marine mammals impacted by the Port of Alaska'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 small numbers 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 ''court concluded'' take limit of 12 percent for small numbers likely 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.* Moreover, since that time the Ninth Circuit Court of Appeals has upheld a small numbers finding that was not based on a quantitative calculation (*Center for Biological Diversity* v. *Salazar,* 695 F.3d 893 (9th Cir. 1012)), and NMFS has more recently authorized take of up to one-third of a population abundance and considers this small.

Comment 20: CBD suggests NMFS has failed to implement ''means of effecting the least practicable adverse impact'' on marine mammals. CBD asserts that NMFS relies on visual monitoring that is known to be ineffective and inadequate to protect marine mammals. CBD suggests lookouts are not as effective in mitigating acoustic impacts as time-area restrictions. They also suggest NMFS failed to consider many other mitigation measures to reduce the proposed activities' impacts to the least practicable level.

Response: NMFS disagrees for several reasons. The POA has added a fourth monitoring station (at Ship Creek) since the notice of proposed IHAs were disseminated for review. At each station, there will be two PSOs on watch at any given time. Further, the PSO stations range from Point Woronzof to the most northern end of the port's property (just south of Cairn Point) allowing for broad coverage of the entirety of lower Knik Arm. This is the most extensive monitoring coverage at the POA to date and NMFS is confident that whales, if present, will be detected. Most of the Level B harassment zones are less than 1 km and the greatest, with the exception of the single 144-in pile that may be driven with a vibratory hammer, the Level B harassment zone is estimated to be approximately 2.2 kms. During the Hilcorp Cook Inlet Pipeline Project, marine mammal observers we able to easily observe CIBWs at this distance and had detections at greater than 8 kms (Sitkiewicz et al., 2018). Further, there are mitigation measures preventing pile driving from occurring if visibility in any portion of the Level B harassment area is obscured by weather or sea state. Therefore, we find the visual monitoring plan is an effective tool at detecting marine mammals, ensuring the mitigation measures are adhered to. These measures effect the least practicable adverse impact on marine mammals.

CDB also suggests we failed to consider other mitigation measures. In the POA's application, they proposed a 100 m shutdown for all marine mammals, including CIBWs, and use of an unconfined bubble curtain. However, our IHAs require much more extensive mitigation. These measures include not starting pile driving if CIBWs are entering Knik Arm, shutting down pile driving if whales approach the Level B harassment zone (which is much greater than 100 m), not vibratory driving 144-in piles in August (a time-area restriction that the CBD claims we did not consider), and employing a confined bubble curtain/casing pile noise attenuation system during Phase 1.

Comment 21: CBD asserts that the proposed activities will have an unmitigable adverse impact on subsistence uses. CBD believes the proposed activities are stressors on beluga whales, which will contribute to their imperilment; therefore, any take of beluga whales has an adverse impact on their availability for subsistence use and must be fully mitigated. They also indicate the IHA should require consultation with Native Alaskan communities to ensure adequate mitigation for subsistence harvest for harbor seals and Steller sea lions and that NMFS must not allow unmitigable adverse impacts on subsistence use of marine mammal stocks.

Response: NMFS agrees with CBD that the authorized taking of marine mammals may not have an unmitigable adverse impact on subsistence uses and we have ensured this is the case. In this case, NMFS has imposed a number of mitigation measures designed to limit the introduction of noise in the aquatic environment through use of noise attenuation devices (*e.g.,* confined bubble curtain) and temporal restrictions (*i.e.,* no vibratory pile driving 144-in piles during August) and, if marine mammals are present, reducing exposure to noise through pile driving shutdown and delay procedures.

Further, the POA notified 14 tribes to the availability of the notice of proposed IHAs for public comment. No subsistence users submitted public comments to NMFS on the proposed IHAs. No tribes have indicated to NMFS concern about the proposed IHAs adversely impacting their subsistence use. NMFS is prescribing much more stringent mitigation and monitoring measures than proposed by the POA, which will reduce the potential impacts to marine mammals. We have found this taking 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.

Overall, there is little subsistence use of marine mammals near the project area and no tribes have alerted NMFS to any concern over the proposed IHAs. The explanation and support for our findings is described further in the *Unmitigable Adverse Impact Determination* section of this notice.

Comment 22: CBD believes the draft Environmental Assessment fails to comply with the requirements of the National Environmental Policy Act. They stipulate the Draft EA fails to consider a reasonable range of alternatives, lacks a meaningful environmental and cumulative impacts analysis and that NMFS must prepare an EIS.

Response: In accordance with the National Environmental Policy Act (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 Companion Manual (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 IHAs) 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 noise 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 construct a new PCT. 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.

NMFS disagrees with CBD that our environmental impacts section is not sufficient. We 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. We have updated both our analysis in this notice and the final EA with the best available science regarding the newly released technical report describing the status of the CIBW stock (Sheldon and Wade, 2019). In the final EA, we also reviewed potential direct, indirect, and cumulative impacts to protected species and their environment, associated with NMFS' proposed action and alternatives. While the draft EA did not identify specific human activities, such as the Hilcorp seismic survey that CBD noted, we did include a section on the effects of oil and gas development in Cook Inlet that includes seismic work; therefore, this survey was not discounted. In the final EA, we included specifics regarding the work in Cook Inlet for which we currently have ITA requests. Since the Draft EA was released, we have also learned of other activity the POA is planning on implementing as well as proposed plans by Alaska DOT in upper Cook Inlet. We have included those activities in the Cumulative Effects section of the final EA.

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 context and intensity of the action, and that intensity is evaluated by considering the ten factors listed in 40 CFR 1508.27(b), CBD argues, that if any one of these factors 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 alone is enough to trigger the need to prepare an EIS.'' NMFS disagrees. The mere presence of one or more factors listed in 40 CFR 1508.27(b) does not necessarily trigger the requirement to prepare an EIS. These factors are specific to evaluating the intensity of potential impacts of an action. NMFS can prepare an EA so long as the record supports the conclusion that potential impacts are not ''significant'' for the purposes of NEPA. Based on the information presented in the application and NMFS' Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities (Companion Manual (CM) for 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 and 40 CFR 1508.9.

Comment 23: 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 and adversely modify their critical habitat.

Response: In our notice of proposed IHAs, NMFS indicated that we have 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 concluding that issuance of take, by harassment, of CIBW, humpback whales (Mexico Distinct Population Segment (DPS)) and Western DPS (wDPS) of 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 Biological Opinion.

Comment 24: 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: NMFS has made the required findings to issue the IHAs, pursuant to the MMPA, and has issued the IHAs. We have also prescribed mitigation measures that effect the least practicable adverse impact on marine mammals, in accordance with the MMPA (see Mitigation section).

Description of Marine Mammals in the Area of Specified Activities

A detailed description of the species likely to be affected by POA's project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (84 FR 72154; December 30, 2019). Please refer to the proposed IHA **Federal Register** notice for these descriptions. Since that notice, there are updates to the abundance and trends on one species: CIBWs. We provide a summary table of marine mammals that may potentially be present in the project area here (Table 3) and a summary of the changes to CIBWs. Additional information regarding population trends and threats may be found in NMFS's 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's website (*https://www.fisheries.noaa.gov/find*-species). Additional information on beluga whales may be found in NMFS' 2016 *Recovery Plan for the Cook Inlet Beluga Whale (Delphinapterus leucas*), available online at *https://www.fisheries.noaa.gov/resource/document/recovery-plan-cook-inlet-beluga-whale-delphinapterus-leucas.*

Table 3 lists all species with expected potential for occurrence in upper Cook Inlet and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2019). 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's SARs). While no 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 and other threats.

TABLE 3—MARINE MAMMAL SPECIES POTENTIALLY OCCURRING IN UPPER COOK INLET, ALASKA

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)						
Family Balaenopteridae (rorquals)						
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	E/D; Y	1,107 (0.3, 865, 2006)	3	2.6
		Central North Pacific	E/D; Y	10,103 (0.3, 7890, 2006)	83	24
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Beluga whale	*Delphinapterus leucas*	Cook Inlet	E/D; Y	279 (-, 250, 2018) [4]	0.54	0
Killer whale	*Orcinus orca*	Alaska Resident	-/-; N	2,347 (N/A, 2,347, 2012)	24	1
		Alaska Transient	-/-; N	587 (N/A, 587, 2012)	5.9	1
Family Phocoenidae (porpoises):						
Harbor porpoise	*Phocoena*	Gulf of Alaska	-/-; Y	31,046 (0.214, N/A, 1998).	Undet	72
Order Carnivora—Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions):						
Steller sea lion	*Eumetopias jubatus*	Western	E/D; Y	54,267 (N/A, 54,267, 2017).	326	247
Family Phocidae (earless seals):						
Harbor seal	*Phoca vitulina*	Cook Inlet/Shelikof	-/-; N	28,411 (26,907, N/A, 2018).	807	807

[1] Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports online at: *www.nmfs.noaa.gov/pr/sars/.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable because it has not been calculated.

[3] These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

[4] Sheldon and Wade (2019). 95 percent probability range is 250–317 whales.

Update to CIBW Population Estimate

Until 2020, the best estimate of the CIBW stock was 327 with a minimum estimate of 311 whales (Muto et al., 2019). In 2020, NMFS released an updated population estimate using a new method to estimate group size from the aerial surveys in the analysis of abundance and trends for CIBWs (Boyd et al., 2019). This new method replaced the method developed by Hobbs et al. (2000, 2015) and has several important differences, as these differences contribute to the disparity between the

Hobbs method and the Boyd method. These differences are fully explained in Sheldon and Wade (2019). In summary, the new method leads to some smaller and some larger group size estimates compared to the older Hobbs et al. (2000, 2015) method, when applied to all groups recorded during the period 2004–2016. Using the older method, the rate of population decline is not as great primarily because the 2016 estimate is higher, and there is no 2018 estimate using this older method. Annual abundance was calculated as the median of all the daily abundance estimates, using all days with an acceptable survey. Using the old method, from 2006 to 2016, the rate of decline was estimated to be -0.5 percent per year, (with a 70 percent probability the population is declining) (Shelden et al. 2017). Using the new method, NMFS found from 2008–2018, the estimated trend in the CIBW population is a decline of -2.3 percent per year. The abundance estimates indicate there is a 99.7 percent probability of a decline, and a 93.0 percent probability of a decline that is more than 1 percent per year.

The best estimate of 2018 abundance for the CIBW population from the aerial survey data is 279 (95 percent probability interval 250 to 317). This is based on the estimate of smoothed abundance for 2018, as described in Sheldon and Wade (2019). A comparison of the population estimates over time is presented in Figure 3.

While Sheldon and Wade (2019) provides explanations for the differences between model results, including inadequacies and biases, the authors do not postulate on the reason for population decline in general (which was evident using both models); however, recent literature suggests prey reductions may be a critical contributing factor (Norman et al., 2019). This is not unexpected as reduced prey availability has been directly linked to increased mortality and reduced health and survival of other marine mammals populations such as the Southern Resident killer whale (*e.g.,* Ward et al., 2009, Trites and Rosen, 2017) and California sea lion (*e.g.,* McClatchie et al., 2016).

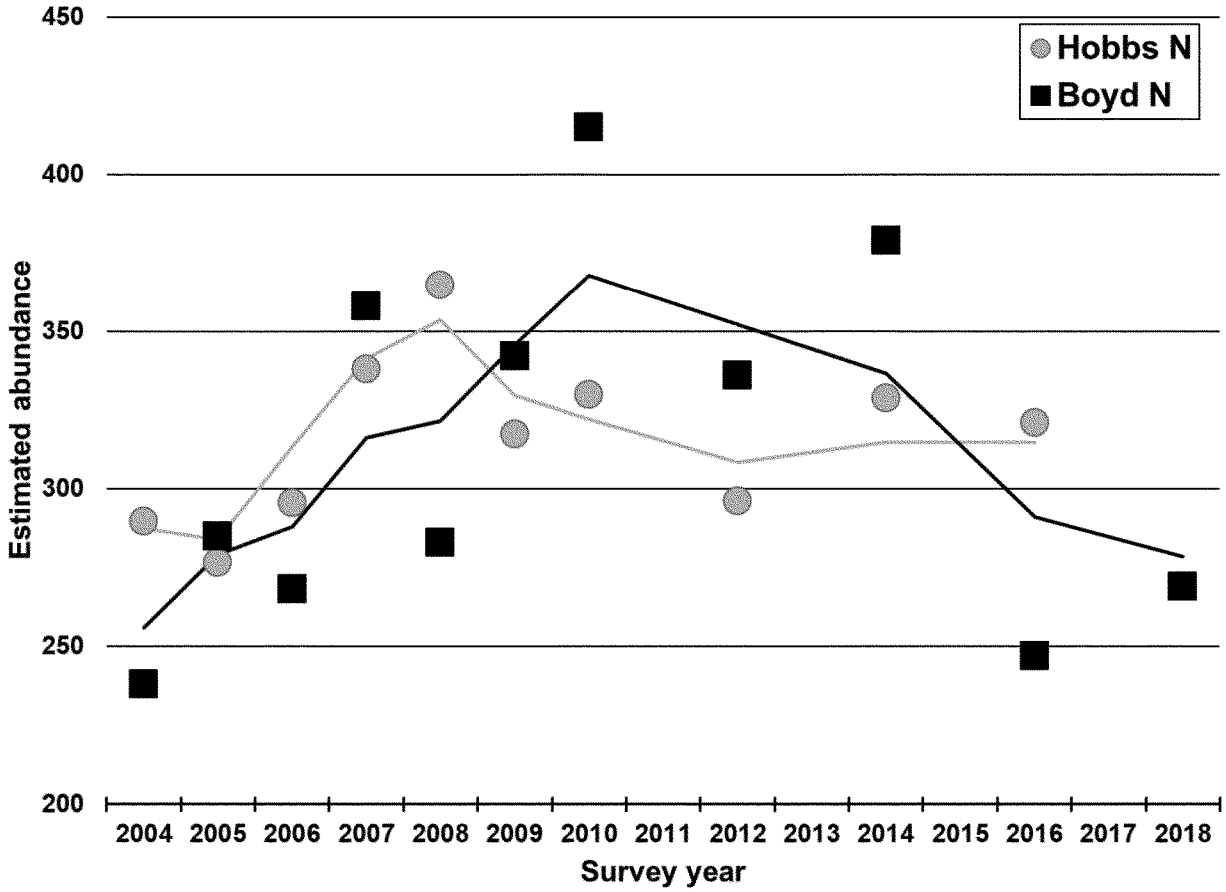

Figure 3. Annual estimates of abundance for both group size estimation methods. The moving average of each set of estimates is also plotted. Taken from Sheldon and Wade (2019).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

The **Federal Register** notice for the proposed IHAs (84 FR 72154; December 30, 2019) included a discussion of the potential effects of the specified activities on marine mammals and their habitat, therefore that information is not repeated in detail here; please refer to that **Federal Register** notice for that information. No new data is available that suggests the potential responses and impacts to marine mammals would differ from those discussed in the notice of proposed IHAs.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through each of the IHAs, which will inform both NMFS' consideration of ''small numbers'' and the negligible impact determination for the two separate IHAs.

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

Authorized takes would primarily be by Level B harassment, as 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 mysticetes, high frequency species, and phocids because predicted auditory injury zones are larger than for mid-frequency species and otariids. Auditory injury is unlikely to occur for mid-frequency species and otariids. The mitigation and monitoring measures are expected to minimize the severity of such 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 is estimated.

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) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of 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 estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed 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 for non-explosive sources—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 (*e.g.,* frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. In general, NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 µPa (rms) for continuous (*e.g.,* vibratory pile-driving, drilling) and above 160 dB re 1 µPa (rms) for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. However, ambient noise levels within Knik Arm are above the 120-dB threshold, and therefore, for purposes of this analysis, NMFS considers received levels above those of the measured ambient noise (122.2 dB) to constitute Level B harassment of marine mammals incidental to continuous noise, including vibratory pile driving.

Results from the most recent acoustic monitoring conducted at the port are presented in Austin et al (2016) and Denes et al (2016) wherein noise levels were measured in absence of pile driving from May 27 through May 30, 2016 at two locations: Ambient-Dock and Ambient- Offshore. NMFS considers the median sound levels to be most appropriate when considering background noise levels for purposes of evaluating the potential impacts of the POA's PCT Project on marine mammals. By using median value, which is the 50th percentile of the measurements, for ambient noise level, one will be able to eliminate the few transient loud identifiable events that do not represent the true ambient condition of the area. This is relevant because during two of the four days (50 percent) when background measurement data were being collected, the U.S. Army Corps of Engineers was dredging Terminal 3 (located just north of the Ambient-Offshore hydrophone) for 24 hours per day with two 1-hour breaks for crew change. On the last two days of data collection, no dredging was occurring. Therefore, the median provides a better representation of background noise levels when the PCT project would be occurring. With regard to spatial considerations of the measurements, the Ambient-Offshore location is most applicable to this discussion as it is consistent with accepted methodology for measuring background noise levels. The median ambient noise level collected over four days at the end of May at the Ambient-Offshore hydrophone was 122.2 dB. We note the Ambient-Dock location was quieter, with a median of 117 dB; however, that hydrophone was placed very close to the dock and not where we would expect Level B harassment to occur given mitigation measures (*e.g.,* shut downs). If additional data collected in the future warrant revisiting this issue, NMFS may adjust the 122.2 dB rms Level B harassment threshold.

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

These thresholds are provided in Table 4 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.*

TABLE 4—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 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 this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activities that will feed into identifying the areas ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The estimated sound source levels and transmission loss coefficient used in our analysis are based on direct measurements during installation of unattenuated 48-in piles during the POA's 2016 TPP and measurements collected during marine construction projects conducted by the U.S. Navy. All source levels used in our analysis are presented in Table 5. We note that both sound source verification tests (in situ measurements at 10 m to refine source levels) as well as measurements taken at the estimated Level B harassment isopleths and in the far field (+1 km) will be collected at the onset of pile driving to verify these estimates.

TABLE 5—ESTIMATED SOUND SOURCE LEVELS WITH AND WITHOUT A BUBBLE CURTAIN

Method and pile size	Sound level at 10 m						Data source
Vibratory	Unattenuated [1]			Bubble curtain			
	db rms			7 dB reduction, dB rms			
144-in	178			171			Caltrans 2015.
48-in	168			161			Austin et al 2016.
36-in	166			159			Navy 2015.
24-in	161			154			Navy 2015.
Impact	Unattenuated [1]			Bubble curtain			
	dB rms	dB SEL	dB peak	dB rms	dB SEL	dB peak	
144-in	209	198	220	202	191	213.	Caltrans 2015
48-in	200	187	215	193	180	208	Austin et al 2016.
36-in	194	184	211	187	177	204	Navy 2015.
24-in	193	181	210	186	174	203	Navy 2015.

[1] We note the only piles that may be driven or removed without a bubble curtain are 24-in battered piles. We included unattenuated SLs here for 36-in, 48-in, and 144-in piles to demonstrate how the 7dB reduction for bubble curtains was applied.

During the TPP, JASCO computed transmission loss (TL) coefficients, derived from fits of the received sound level data versus range. TL coefficients varied between piles with values ranging from 13 to 19.2 for impact pile driving and from 12.6 to 17.9 for vibratory pile driving when using sound attenuation devices. Results for the unattenuated hydraulic impact hammer yielded the highest TL coefficient, 19.2, indicating that sounds from the hydraulic impact hammer decayed most rapidly with range compared to the other hammers. The TL coefficient for the unattenuated diesel impact hammer averaged 17.5. Sounds from the unattenuated vibratory hammer had the lowest TL coefficient, with values of 16.1 and 16.9.

Based on these data, the POA proposed different transmission loss rates depending on if SEL (used for Level A harassment) or rms (used for Level B harassment) values were being evaluated. SPLrms is a pressure metric and SEL an energy metric. The difference in TL coefficient is a reflection of how SPLrms or SEL is dissipated in the marine environment. During underwater sound propagation, pressure amplitude tends to suffer more loss due to multipath propagation and reverberation, while acoustic energy does not dissipate as rapidly. Accordingly, the POA proposed using TL rate of 16.85 for assessing potential for Level A harassment from impact pile driving but a TL rate of 18.35, based on Austin et al. (2016), when assessing potential for Level B harassment from impact pile driving. For vibratory pile

driving, SPLrms is used for both Level A harassment and Level B harassment analysis and, based on Austin et al. (2016) the POA applied a TL rate of 16.5. NMFS found these transmission loss rates acceptable and carried them forward in our analysis. Again, on site acoustic monitoring in both the near and far field (to capture any sediment-borne noise) at the onset of pile driving will verify estimates made in our analysis.

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources (such as pile driving), NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS.

The User Spreadsheet also includes a default, single frequency weighting factor adjustment (WFA) to account for frequency hearing groups. During the 2016 TPP, the POA collected direct measurements of sound generated during installation of 48-in piles. The spectra associated with impact and vibratory driving 48-in unattenuated piles was also derived. Therefore, we accepted POA's applied spectra approach for 48-in piles but relied on the User Spreadsheet default WFA for all other pile sizes.

Inputs used in the User Spreadsheet for 24-in, 36-in and 144-in pilesare reported in Table 6.

TABLE 6—NMFS USER SPREADSHEET INPUTS

	24-in (unattenuated)	24-in (bubble curtain)	36-in (bubble curtain)	48-in (bubble curtain)	144-in (bubble curtain)
User Spreadsheet Input: Impact Pile Driving (TL = 16.85)					
Spreadsheet Tab Used.	(E.1) Impact pile driving	(E.1) Impact pile driving.	(E.1) Impact pile driving.	(E.1) Impact pile driving.	(E.1) Impact pile driving.
Source Level (Single Strike/shot SEL).	181	174	177	180	191
Weighting Factor Adjustment (kHz).	2	2	2	measured spectra	2
Number of strikes pile.	50 (re-strikes)	50 (re-strikes)	3,000	2,300 or 3,000	5,000
Piles per day	1–4	1–4	1–3	1–3	0.3 or 0.7
User Spreadsheet Input: Vibratory Pile Driving (TL = 16.5)					
	24-in (unattenuated)	24-in (bubble curtain)	36-in (bubble curtain)	48-in (bubble curtain)	144-in (bubble curtain)
Spreadsheet Tab Used.	(A) Non-Impul, Stat, Cont.	(A) Non-Impul, Stat, Cont..	(A) Non-Impul, Stat, Cont..	(A) Non-Impul, Stat, Cont..	(A) Non-Impul, Stat, Cont.
Source Level (SPL RMS).	161	154	159	161	171
Weighting Factor Adjustment (kHz).	2.5	2.5	2.5	measured spectra	2.5
Time to drive single pile (minutes) [1].	75	75	75	30	45
Piles per day	1–4	1–4	1–4	1 [2]	1

[1] In some cases, only 30 minutes may be required to drive a pile using a vibratory hammer; however, here we default to the greatest amount of time indicated per pile.

[2] The POA indicated a vibratory hammer would only be used if an obstruction is encountered; therefore, the most probable scenario is, at most, only one 48-in pile per day would require use of a vibratory hammer.

To calculate the Level B harassment isopleths, NMFS considered SPLrms source levels and the corresponding TL coefficients of 18.35 and 16.5 for impact and vibratory pile driving, respectively. The resulting Level A harassment and Level B harassment isopleths are presented in Table 7.

TABLE 7—DISTANCES TO LEVEL A HARASSMENT, BY HEARING GROUP, AND LEVEL B HARASSMENT THRESHOLDS PER PILE TYPE AND INSTALLATION METHOD

Pile size	Hammer type	Attenuation	Piles installed/ day	Level A harassment (m)					Level B harassment (m)
				LF	MF	HF	PW	OW	
48-in (2,300 strikes per pile).	Impact	Bubble Curtain	1	655	34	766	376	36	[1] 824
			2	989	51	1,156	567	55	
			3	1,258	65	1,470	721	70	

TABLE 7—DISTANCES TO LEVEL A HARASSMENT, BY HEARING GROUP, AND LEVEL B HARASSMENT THRESHOLDS PER PILE TYPE AND INSTALLATION METHOD—Continued

Pile size	Hammer type	Attenuation	Piles installed/ day	Level A harassment (m)					Level B harassment (m)
				LF	MF	HF	PW	OW	
48-in (3,000 strikes per pile).	Impact	Bubble Curtain	1	767	39	897	440	43	824
			2	1,158	59	1,353	664	64	
			3	1,473	76	1,721	844	82	
48-in	Vibratory	Bubble Curtain	1	5	1	7	3	0	2,247
36-in	Vibratory	Bubble Curtain	3	12	1	17	8	1	1,699
			4	14	2	20	9	1	
	Impact	Bubble Curtain	1	509	26	595	292	28	296
			2	768	39	898	440	43	
			3	978	50	1,142	560	54	
24-in	Vibratory	Bubble Curtain	3	3	0	5	2	0	846
			4	7	1	10	4	0	
		Unattenuated (6 battered piles in Phase 2).	3	16	2	22	10	1	2,247
			4	19	2	27	12	1	
	Impact (50 re-strikes per pile)[2].	Bubble Curtain	1	30	2	35	17	2	261
			4	68	4	79	39	4	
		Unattenuated (6 battered piles in Phase 2).	1	78	4	91	44	4	629
			4	176	9	206	101	10	
144-in	Impact	Bubble Curtain	0.3	2,286	117	2,672	1,311	127	1,945
			0.7	3,781	194	4,418	2,167	210	1,945
	Vibratory		1	24	3	34	15	1	9,069

[1] The Level B harassment isopleth of 824 m is an average of modeled distances based on *in situ* data presented in Austin et al. (2016; Table 12).
[2] For impact hammering of 24-in temporary piles, we include information only for one or four piles, to provide the general range of very small zones. The number of piles may vary from one to four piles per day.

Marine Mammal Occurrence and Take Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals and present take calculations.

For all species of cetaceans other than beluga whales, density data is not available for upper Cook Inlet. Therefore, the POA relied on marine mammal monitoring data collected during past POA projects. These data cover the construction season (April through November) across multiple years. Estimated exposure from pile installation for all marine mammals except beluga whales is calculated by the following equation: Exposure estimate = N * # days of pile installation, where: N = highest daily abundance estimate for each species in project area across all years of data.

Harbor Seals

Marine mammal monitoring data collected during previous POA projects were used to estimate daily sighting rates for harbor seals in the project area (see Table 4–1 in POA's application). The highest individual sighting rate recorded for a previous year was used to quantify take of harbor seals for pile installation associated with the PCT. The number of sightings of harbor seals during 2016 TPP construction monitoring was 28 sightings recorded over 83.5 hours of monitoring from May 3 through June 21, 2016. Based on these observations, the sighting rate during the 2016 TPP construction monitoring period was one harbor seal every 3 hours, or approximately four harbor seals per 12-hour work day. Given the likely increase in harbor seal abundance over the years, the POA and NMFS doubled this number to estimate take (*i.e.,* up to 8 seals per day could be taken by harassment). However, the Commission commented that because previous monitoring data indicated a maximum of nine seals were observed on a particular day during previous monitoring, we should use 9 seals (not 8) for days when Level B harassment zones are within 2 km and double this number (18 seals per day) when Level B harassment zones extend to 4 kms since all seals were observed within 2 kms, as they are difficult to observe beyond this distance. While this is conceptually a reasonable alternative, the take numbers resulting from use of 8 seals per day far exceed what the years of monitoring data indicate as reasonable estimates of potential harassment. Over the course of 8 years of data (no monitoring was conducted in 2012, 2013, and 2014 as no pile driving was conducted at the POA during these years), the maximum number of seals observed in a year (2009) was 57 seals (while other years ranged from 0–34 seals total). The monitoring conducted during 2009 was extensive (3,222 hours over 214 days from March through December). The average number of seals observed per year across all years of monitoring was 17 seals. Therefore, it is reasonable to assume our originally proposed take estimates are more than sufficient to account for potential harassment from the PCT project, as the take estimates for Phase 1 and Phase 2 are more than 17 and 10 times the maximum number of seals observed in any given prior year, respectively. This 10 to 17 fold increase adequately accounts for seals present at greater than 2 kms. Therefore, we maintain our original take estimate approach.

Pile installation and removal is anticipated to take approximately 127 days for Phase 1 and 75 days for Phase 2. Therefore, we estimate no more than 1,016 instances of harbor seal take during Phase 1 (8 harbor seals per day * 127 days) and 600 instances of harbor seal take (8 harbor seals per day * 75 days) during Phase 2.

The mouth of Ship Creek, where harbor seals tend to concentrate is located approximately 700 m from the southern end of the PCT, and is therefore located outside the harbor seal Level A harassment zone for the majority of pile sizes for both impact and vibratory pile installation. However, there is potential for Level A harassment near Ship Creek during installation of three 48-in piles per day and installation of 144-in piles. We estimate

30 percent of the estimated take could be in the form of Level A harassment, as approximately 30 percent of the work may result in Level A harassment isopleths extending to Ship Creek. Therefore, the POA has requested, and NMFS has authorized 305 Level A harassment and 711 Level B harassment takes in Phase 1 and 180 Level A harassment and 420 Level B harassment takes in Phase 2.

Steller Sea Lions

Steller sea lions are anticipated to be encountered in low numbers, if at all, within the project area. Three sightings of what was likely a single individual occurred in the project area in 2009 and two sightings occurred in 2016. Based on observations in 2016, we anticipate an exposure rate of 2 individuals every 19 days during PCT pile installation and removal. Based on this rate, we are authorizing 13 sea lion takes during Phase 1 (127 days * [2 sea lions every 19 days]) and 8 Steller sea lion takes during Phase 2 (75 days for Phase 2 * [2 sea lions every 19 days]). During installation of 144-in piles (Phase 2), the Level A harassment isopleth extends beyond 100 m. Although Steller sea lions are readily detectable at these distances, we are not requiring the POA to shut down if a Steller sea lion is observed. Steller sea lions are rarely present in Knik Arm; however, they can linger in the area for multiple days. During Phase 1, the Level A harassment isopleth is less than the 100 m shutdown zone for all scenarios; therefore, the potential for Level A harassment take is discountable. During installation of the 144-in piles in Phase 2, there is a low potential for Level A harassment and an animal may remain for a couple of days; therefore, we allocate two takes in Phase 2 to Level A harassment.

Harbor Porpoise

Previous monitoring data at the POA were used to evaluate daily sighting rates for harbor porpoises in the project area. During most years of monitoring, no harbor porpoises were observed. The highest individual sighting rate for any recorded year during pile installation and removal associated with the PCT was an average of 0.09 harbor porpoises per day during 2009 construction monitoring, but this value may not account for increased sightings in Upper Cook Inlet (Shelden et al. 2014). Therefore, the POA assumed that one harbor porpoise could be observed every 2 days of pile driving. Based on this assumption, the POA has requested, and NMFS has authorized, 64 takes during Phase 1 (127 days * [1 harbor porpoise every 2 days]) and 38 takes during Phase 2 (75 days for Phase 2 * [1 harbor porpoise every 2 days]). This estimate also covers the possibility that larger groups (2–3 individuals) of harbor porpoise could occur occasionally.

Harbor porpoises are relatively small cetaceans that move at high velocities, which can make their detection and identification at great distances difficult. Using the NMFS User Spreadsheet, impact driving 36-in, 48-in and 144-in piles results in Level A harassment isopleths larger than the Level B harassment isopleth. Vibratory driving and removal result in much smaller Level A harassment zones than Level B harassment zones and many temporary piles (the bulk of the work) would be installed and removed with a vibratory hammer. Further, the Level A harassment isopleths consider long durations and harbor porpoise are likely moving through the area, if present, not lingering. Therefore, we authorized approximately one-third of the total expected take in the form of Level A harassment. For Phase 1, we authorized 21 takes by Level A harassment and 43 takes by Level B harassment. For Phase 2, we authorized 13 Level A harassment and 25 Level B harassment takes.

Killer Whales

Few, if any, killer whales are expected to approach the project area. No killer whales were sighted during previous monitoring programs for the Knik Arm Crossing and POA construction projects, including the 2016 TPP. The infrequent sightings of killer whales that are reported in upper Cook Inlet tend to occur when their primary prey (anadromous fish for resident killer whales and beluga whales for transient killer whales) are also in the area (Shelden et al. 2003). Previous sightings of transient killer whales have documented pod sizes in upper Cook Inlet between one and six individuals (Shelden et al. 2003). The potential for exposure of killer whales within the Level B harassment isopleths is anticipated to be extremely low. Level B harassment take is conservatively estimated at no more than 12 individuals during Phase 1 and Phase 2 to account for two large (n=12) groups or several smaller groups. No Level A harassment take for killer whales is anticipated or authorized due to the small Level A harassment zones and implementation of a 100 m shutdown which is larger than Level A harassment isopleths.

Humpback Whales

Sightings of humpback whales in the project area are rare, and the potential risk of exposure of a humpback whale to sounds exceeding the Level B harassment threshold is low. Few, if any, humpback whales are expected to approach the project area. However, there were two sightings in 2017 of what was likely a single individual at the Ship Creek Boat Launch (ABR 2017) which is located south of the project area. Based on these data, the POA conservatively estimates one humpback whale could be harassed every 16 days of pile driving. Therefore, the POA requested 8 humpback whale takes during Phase 1 (127 days for Phase 1 * [1 humpback whale every 16 days]) and 5 takes (75 days for Phase 2 * [1 humpback whale every 16 days]) for Phase 2. This could include sighting a cow-calf pair on multiple days or multiple sightings of single humpback whales. The POA did not request Level A harassment take of humpback whales; however, based on the large distances to the Level A harassment thresholds relative to Level B harassment isopleths and the fact humpback whale sightings in Upper Cook Inlet are rare, NMFS authorized two Level A harassment takes per year to account for a single individual or a cow/calf pair. Therefore, NMFS has authorized two Level A harassment takes and six Level B harassment takes during Phase 1 and two Level A harassment takes and three Level B harassment takes for Phase 2.

Beluga Whales

For beluga whales, we looked at several sources of information on marine mammal occurrence in upper Cook Inlet to determine how best to estimate the potential for exposure to pile driving noise from the PCT Project. In their application, the POA took a two-step approach to estimating Level B harassment take. The POA first estimated the numbers of beluga whales potentially exposed to noise levels above the Level B harassment threshold for pile installation and removal using the following formula: Beluga Exposure Estimate = N * Area * number of days of pile installation/removal, where: N = maximum predicted # of beluga whales/km^2 in Knik Arm (0.291 whales/km^2) based on data from Goetz et al. (2012a) and Area = Area ensonified above Level B harassment threshold (km^2). We note the actual beluga whale densities within the Level B harassment isopleths predicted for the PCT project ranged from 0.042 to 0.236 beluga whales/km^2. However, the POA applied the highest beluga whale density in upper Knik Arm. The higher densities north of the POA are expected as beluga whales tend to concentrate in Eagle Bay to forage whereas in the lower Arm, where the

POA is located, habitat use is more commonly associated with traveling. The POA's simple calculation results in 103 takes in Phase 1 and 125 takes in Phase 2. The second step in POA's take estimate approach was to apply a 50 percent correction factor to their density-based calculation. The POA provided several reasons why this reduction factor was appropriate, including, but not limited to: The POA's commitment to using a bubble curtain means that noise levels along the western side of Knik Arm will remain below the regulatory thresholds; providing a travel corridor for beluga whales to access upper Knik Arm; for the majority of PCT construction and pile installation and removal, only approximately half of the width of Knik Arm, along the eastern shore, would be ensonified; beluga whales observed in Knik Arm during the autumn were most frequently sighted on the western side of the arm (Funk et al. 2005); and beluga whales are present in Knik Arm year-round, but sightings are much lower in winter through early summer.

We reviewed the POA's density-based take calculation approach and their reasons for applying a 50 percent correction factor. We determined use of the Goetz density data for this specific project does not represent the best available scientific information in this circumstance because the density data is based on June aerial surveys while the PCT project is occurring from April through November, the data is over seven years old, and the multiple years of monitoring data collected by the POA is not incorporated into this approach. Regarding the rationale for applying a 50 percent correction factor, we found the use of a bubble curtain and the fact the majority of pile driving would ensonify half or less than half of the width of Knik Arm is already captured by the ensonified area which is embedded into the take calculation. The POA is not pile driving during winter when beluga whale abundance is lowest and although early summer tends to see lower beluga abundance, the density used in the take calculation is from June surveys.

To better capture beluga whale distribution and abundance, we undertook a multi-step analysis consisting of an evaluation of long-term, seasonal sighting data, mitigation and monitoring measures, the amount of documented exposure from previous POA projects compared to authorized take, and considered group size. First, in lieu of density data, NMFS applied sighting rate data presented in Kendell and Cornick (2015) to estimate hourly sighting rates per month (April through November). We then identified hours of pile driving per month. The POA indicated there will be extended durations when no pile driving is happening (*e.g.,* later in the season when decking and other out-of-water work is occurring); however, the schedule could not be more refined than assuming an equal work distribution across the construction season. The POA did indicate the first two weeks of April and the last two weeks in November would be most likely utilized for equipment mobilization and demobilization; therefore, pile driving effort during those months were limited to two weeks. The data and calculated exposure estimates are presented below in Table 8. These calculations assume no mitigation (*i.e.,* uncorrected take estimates) and that all animals observed would enter a given Level B harassment zone during pile driving. In total, we would expect approximately 94 exposures in Phase 1 and 60 exposures in Phase 2.

TABLE 8—UNCORRECTED BELUGA WHALE EXPOSURE ESTIMATES FOR PHASE 1 AND PHASE 2

Month	Monitoring data [1]			Estimated instances of take			
	Effort hours	Number of whales observed	Average whale/hr	Pile driving hours phase 1 [2]	CIBW exposures phase 1	Pile driving hours phase 2 [2]	CIBW exposures phase 2
April	12	2	0.17	25.64	4.27	16.37	2.73
May	156	40	0.26	51.29	13.15	32.71	8.39
June	280	8	0.03	51.29	1.47	32.71	0.94
July	360	2	0.01	51.29	0.28	32.71	0.18
August	426	269	0.63	51.29	32.38	32.71	20.65
Sept	447	169	0.38	51.29	19.37	32.71	12.35
October	433	22	0.05	51.29	2.61	32.71	1.66
Nov	215	175	0.82	25.64	20.91	16.37	13.35
Total	2,317	685	0.30	359.02	94.44	229.00	60.25

[1] From Kendell and Cornick 2015.
[2] Assumes equal work distribution/month except in April and November when the POA has indicated they would be conducting only 2 weeks of pile driving due to time needed for mobilization and demobilization.

NMFS then considered the prescribed mitigation as well as distribution of beluga whales in Knik Arm. In the POA's application, they proposed a 100-m shutdown zone for all marine mammals. However, as described in more detail below, NMFS has prescribed additional mitigation designed to reduce Level B harassment take as well as avoid Level A harassment take. We recognize that in certain situations, pile driving may not be able to be shut down prior to whales entering the Level B harassment zone due to safety concerns. During previous monitoring, sometimes beluga whales were initially observed when they surfaced within the harassment zone. For example, on November 4, 2009, 15 whales were initially sighted approximately 950 meters north of the project site near the shore, and then they surfaced in the Level B harassment zone during vibratory pile driving (ICRC 2009b). Construction activities were immediately shut down, but the 15 whales were nevertheless exposed within the Level B harassment zone. On other occasions, beluga whales were initially sighted outside of the harassment zone and shutdown was called, but the beluga whales swam into the harassment zone before activities could be halted, and exposure within the harassment zone occurred. For example, on September 14, 2009, a construction observer sighted a beluga whale just outside the harassment zone, moving quickly towards the 1,300 m Level B harassment zone during vibratory pile driving. The animal entered the harassment zone before construction activity could be shut down (ICRC 2009c). However, we note that for the PCT, there will be four PSO

stations, with the southern-most station near Point Woronzof and the northern-most station at the north end of POA property (immediately south of Cairn Point). No less than 11 PSOs will be on watch at any given time during days pile driving is occurring. In addition, we expect the Level B harassment zones for a majority of work to be smaller than previous zones given the use of the confined bubble curtain system with the casing pile. For these reasons, we believe the ability to detect whales and shut down prior to them entering the Level B harassment zones will be enhanced from previous years.

To more accurately estimate potential exposures than simply using the uncorrected numbers, which does not account for any mitigation, we looked at previous monitoring results at the POA in relation to authorized take numbers. Between 2008 and 2012, NMFS authorized 34 beluga whale takes per year to POA, with the same Level B harassment shutdown mitigation measure that are included in the IHAs (we note that in these IHAs, we have also included additional mitigation designed to reduce the potential for take). The percent of the authorized takes that may have occurred as a result of documented exposures within harassment zones during this time period ranged from 12 to 59 percent with an average of 36 percent (Table 9). The previous method of estimating take was based on density; however, the results between using densities versus sighting rate are somewhat comparable (*e.g.,* 94 exposures in Phase 1 using sighting rates versus 103 exposures using the highest density in Knik Arm). Further, there was extensive scientific monitoring and POA construction monitoring occurring during these time periods; therefore, we believe there is little potential that animals were taken but not observed. Therefore we believe this first step in our analysis is reasonable.

TABLE 9—AUTHORIZED AND REPORTED BELUGA WHALE TAKES DURING POA ACTIVITIES FROM 2009–2012

ITA effective dates	Reported takes	Authorized take	Percent of authorized takes occurred
15 July 2008–14 July 2009	12	34	35
15 July 2009–14 July 2010	20	34	59
15 July 2010–14 July 2011	13	34	38
15 July 2011–14 July 2012	4	34	12

Second, we applied the highest percentage of previous takes (59 percent) to ensure potential impacts to beluga whales are adequately evaluated. Therefore, we assume that approximately 59 percent of the takes calculated for Phase 1 (n=94) and Phase 2 (n=64) will actually be realized. This approach is further supported by the mitigation measures, which are strict shutdown requirements for CIBWs, with a goal of avoiding Level B harassment take altogether.

Finally, we then considered group size from the long-term scientific monitoring effort and POA opportunistic data to determine if these numbers represented realistic scenarios. Figure 4 presents data from the scientific monitoring program. The scientific monitoring data set documented 390 beluga whale sightings.

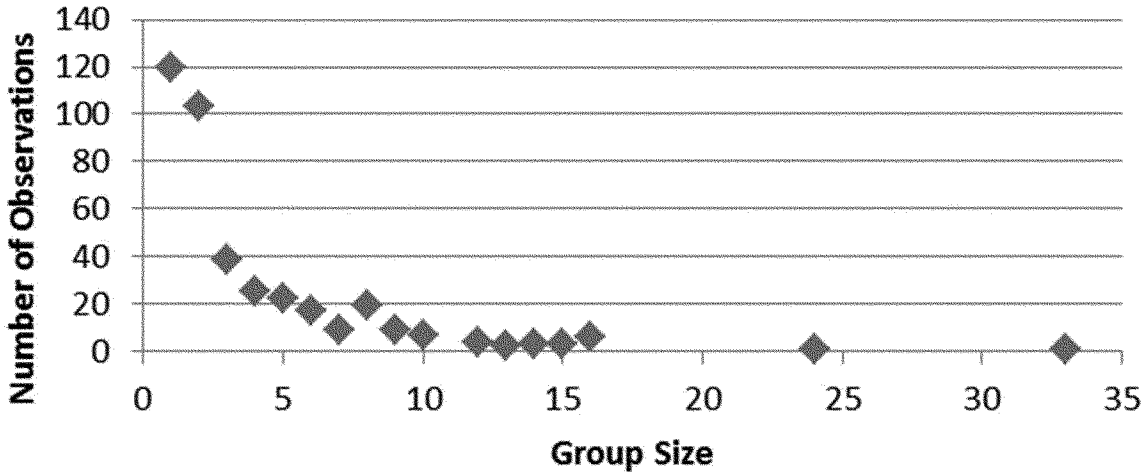

Figure 4. CIBW Sighting Data from POA Scientific Monitoring.

Group size exhibits a mode of 1 and a median of 2, indicating that over half of the beluga groups observed over the 5-year span of the monitoring program were of individual beluga whales or groups of 2. The 95th percentile of group size from the APU scientific monitoring data set is 11.1 beluga whales. This means that, of the 390 documented beluga whale groups in this data set, 95 percent consisted of fewer than 11.1 whales; 5 percent of the groups consisted of more than 11.1 whales. We conclude the amount of take authorized following the approach above allows for the potential for both several small and some large groups to be exposed to noise above NMFS

harassment thresholds. When considering the extensive monitoring (four PSO locations) and mitigation never before required (*e.g.,* pre-clearance of greater than the Level B harassment zone), the amount of take authorized is justified.

For reasons described above, NMFS believes this approach adequately analyzes the risk of beluga whale exposure to Level B harassment from the PCT Project. We conclude there is the potential for 55 exposures in Phase 1 and 35 exposures in Phase 2 (Table 10).

TABLE 10—BELUGA WHALE LEVEL B HARASSMENT EXPOSURES

PCT construction phase	Calculated exposure	Authorized take [1]
Phase 1—2020	94	55
Phase 2—2021	60	35

[1] Authorized take is identified as 59 percent of the calculated exposures using sighting rates.

In summary, the total amount of Level A harassment and Level B harassment authorized for each marine mammal stock is presented in Table 11.

TABLE 11—AUTHORIZED AMOUNT OF TAKE, BY STOCK AND HARASSMENT TYPE

Species	Stock	Phase 1 (2020)			Phase 2 (2021)		
		Level A	Level B	Percent of stock	Level A	Level B	Percent of stock
Humpback whale	Central or Western N Pacific	2	6	0.7	2	3	0.7
Beluga whale	Cook Inlet	0	55	19.7	0	35	12.5
Killer whale	Transient/Alaska Resident	0	12	2	0	12	2
Harbor porpoise	Gulf of Alaska	21	43	0.2	13	25	0.2
Steller sea lion	Western	0	13	<0.1	2	6	<0.1
Harbor seal	Cook Inlet/Shelikof	305	711	3.6	180	420	2.1

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 such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such 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, we carefully consider 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, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The POA presented mitigation measures in section 11 of their application that NMFS found did not effect the least practicable adverse impact on marine mammals, namely CIBWs. Therefore, NMFS worked with the POA to greatly improve on mitigation measures that both reduce noise into the aquatic environment and reduce the potential for CIBWs to be adversely impacted from any unavoidable noise exposure.

A key mitigation measure NMFS considered for this project is reducing noise levels propagating into the environment. The POA will use a confined bubble curtain on all piles in Phase 1 when water depth is deep enough to deploy the bubble curtain. At this time, NMFS is not requiring an confined bubble curtain for Phase 2 because the contractor has not been chosen by POA at this time, the effectiveness of the confined bubble curtain will be proven during Phase 1 and currently, there is no casing pile large enough to encapsulate 144-in piles. However, at minimum, an unconfined bubble curtain will be required for all plumb piles in Phase 2.

In addition to noise attenuation devices, NMFS considered practicable work restrictions. For installation of 144-in piles included in Phase 2 (2021), NMFS has determined that given the extensive Level B harassment zone generated from this activity, vibratory driving these large piles during peak beluga whale season poses an amount of risk and uncertainty to the degree that it should be minimized. This August peak is confirmed through acoustic monitoring (Castellote et al. 2020) where the authors indicate beluga whales appeared concentrated in the upper inlet year-round, but particularly feeding in river mouths from April–December, shifting their geographical foraging preferences from the Susitna River region towards Knik Arm in mid-August, and dispersing towards the mid inlet throughout the winter. Therefore, vibratory driving 144-in piles will not

occur during August. Further, to minimize the potential for overlapping sound fields from multiple stressors, the POA will not simultaneously operate two vibratory hammers for either pile installation or removal. This measure is designed to reduce simultaneous in-water noise exposure. Because impact hammers will not likely be dropping at the same time, and to expedite construction of the project to minimize pile driving during peak beluga whale abundance periods, NMFS is not proposing to restrict the operation of two impact hammers at the same time.

NMFS also considered other means by which to remove piles since the majority of piles installed for this project are temporary. NMFS inquired about the potential to direct pull piles or cut them off at the mudline; thereby, reducing in-water noise levels. The POA responded that the depth at which temporary piles would be installed and substrate type precludes directly pulling the piles. Cutting piles at the mudline also presents navigational (*e.g.,* anchoring) and safety concerns. Therefore, temporary piles will be removed with a vibratory hammer; however, all will be done so in the confines of a bubble curtain.

In their IHA application, the POA proposed a 100-m shutdown zone for all marine mammals or, where the Level A harassment zone was deemed to be greater than 100 m, a shutdown zone equivalent to the Level A harassment zone. NMFS found this measure did not effect the least practicable adverse impact on all marine mammals for several reasons.

First, except for 48-in piles, the Level A harassment zones in the application were based on estimated spectra, a methodology that NMFS does not believe appropriate. Therefore, NMFS calculated Level A harassment zones for all piles (except 48-in piles) using the single frequency, default weighting factor adjustment provided in the NMFS User Spreadsheet. As shown in Table 7, Level A harassment zones for low-frequency and high frequency cetaceans and pinnipeds are relatively large when considering multiple piles installed per day and installation of the 144-in piles. Sighting rates at these distances, specifically for harbor seals and porpoise, are likely ineffective to avoid take. Therefore, the POA's proposal to shutdown at the Level A harassment zone is unlikely to be effective for smaller species (*i.e.,* harbor seal and harbor porpoise). Therefore, while the POA has the liberty to shutdown at greater than 100 m; this is likely a more reasonable distance to observe these small, erratic species, making the mitigation measure more effective. For these reasons, the IHAs include a 100-m shutdown zone for all marine mammals (except CIBWs) and has issued Level A take, where appropriate.

For beluga whales, NMFS determined the proposed shutdown zone of 100 m or the Level A harassment zone (if greater than 100 m) was not consistent with the conservation intentions of the POA nor what NMFS would consider as effecting the least practicable adverse impact based on the proposed project description and acoustic analysis. NMFS and the POA entered into discussions to address these issues and have determined that measures from previous IHAs should be carried over (*e.g.,* shutdown at the Level B harassment zone) but additional measures would ensure valuable protection and conservation of CIBWs. Therefore, NMFS has included mitigation measures exceeding those proposed by the POA in their application:

- Prior to the onset of pile driving, should a CIBW be observed approaching the mouth of Knik Arm, pile driving will be delayed. This in-bound pre-clearance line extends from Point Woronzof to approximately 2.5 kms west of Point McKenzie. Pile driving may commence once the whale(s) moves at least 100 m past the Level B harassment zone and on a path away from the zone. A similar pre-pile driving clearance zone will be established to the north of the POA (from Cairn Point to the opposite bank), allowing whales to leave Knik Arm undisturbed. Similar to the in-bound whale clearance zone, pile driving may not commence until a whale(s) moves at least 100 m past the Level B harassment zone and on a path away from the zone. If non-beluga whale species are observed within or likely to enter the Level B harassment zone prior to pile driving, the POA may commence pile driving but only if those animals are outside the 100 m shutdown zone.
- If pile driving has commenced and a CIBW is observed within or likely to enter the Level B harassment zone, pile driving will shut down and not re-commence until the whale is out of and on a path away from the Level B harassment zone or until no beluga whale has been observed in the Level B harassment zone for 30 minutes.
- If vibratory hammering is required on a 144-in pile, it may not be possible to monitor the entire Level B harassment zone, as this zone may extend beyond the pre-clearance zone. In this case, the pre-clearance zone remains applicable.
- If, during pile driving 24-, 36-, and 48-in piles, PSOs can no longer effectively monitor all waters within the CIBW Level B harassment due to environmental conditions (*e.g.,* fog, rain, wind), pile driving may continue only until the current segment of 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 must be cleared again for 30 minutes prior to pile driving.

In addition to these measures which greatly reduce the potential for harassment to CIBWs and establish shutdown zones that realistically reflect non-beluga whale detectability, NMFS is including the following additional mitigation measures:

- PSOs shall begin observing for marine mammals 30 minutes before pile driving begins for the day and must continue for 30 minutes when pile driving ceases at any time. If pile driving has ceased for more than 30 minutes within a day, another 30-minute pre-pile driving observation period is required before pile driving may commence.
- If a marine mammal is entering or is observed within an established shutdown zone, pile driving must be halted or delayed. Pile driving may not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes (non-CIBW) or 30 minutes (CIBW) have passed without subsequent detections. NMFS may adjust the shutdown zones pending review and approval of an acoustic monitoring report.
- 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 thirty-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 thirty minutes or longer.
- For in-water construction other than pile driving, the POA must cease operations or reduce vessel speed to the minimum level required to maintain steerage and safe working conditions if a marine mammal approaches within 10 m of the equipment or vessel.
- POA is required to conduct briefings for construction supervisors and crews, the monitoring team, and POA staff prior to the start of all pile driving activity, and when new personnel join the work, in order to

explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.

• If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone (Table 7), pile driving and removal activities must shut down immediately using delay and shut-down procedures. Activities must not resume until the animal has been confirmed to have left the area or the 15 (non-CIBW) or 30 (CIBW) minute observation period has elapsed.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures provide the 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 such species or stock for subsistence uses.

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 in the action area. 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 action; 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).

• Mitigation and monitoring effectiveness.

During the 2016 TPP, observers for that project provided a number of recommendations to improve marine mammal monitoring for POA projects. These recommendations included:

• A minimum of three PSOs at an observation station is necessary to prevent fatigue and increase accuracy of detecting marine mammals, especially for large-radius zones. When using three PSOs, one PSO is observing, one PSO is recording data (and observing when there are no data to record), and the third PSO is resting. A fourth PSO allows the scanning of a 90-degree arc, instead of a 180-degree arc, increasing scan intensity and the likelihood of detecting marine mammals. Thirty to 60 minute rotations work well with this schedule.

• Communications between the pile driving/construction contractor and the PSOs should take place between one dedicated point of contact, or Lead PSO, for each shift.

• Each observation station should employ a pair of 25-power binoculars as they were superior to the 7- and 10-power binoculars at detecting and identifying marine mammals at greater distances.

• Electronic data collection methods should be considered. Tablet applications and other technological advances make it possible to collect data quickly and accurately. A theodolite can be plugged into the device and marine mammal locations can be calculated on the spot, minimizing uncertainty. Data can be downloaded throughout the day to a database, eliminating the need for data entry by hand, and allowing quicker data assessment.

• Hard copy maps with pre-established grid-cells and harassment zones specific to the pile location being driven were invaluable. These maps allowed for immediate, accurate and consistent identification of marine mammal locations relative to the harassment zones, regardless of observation station.

The POA's IHA application addresses the majority of these recommendations in its Marine Mammal Monitoring Plan (Appendix A in POA's application) and NMFS has included additional measures here. NMFS is requiring four monitoring stations, and requiring at least three PSOs (two on-watch and one to record data) to be positioned at the northern and southern stations while two PSOs will be on-watch at the PCT (*i.e.,* pile driving) station. Each station will be equipped with several pieces of equipment (see section 2.4 in Appendix A of POA's application), including 25x binoculars and a range finders, as recommended above. One station will have a theodolite. PSOs may observe for no more than 4 hours at time and no more than 12 hours per day. The POA will submit all PSO CVs to NMFS prior to a PSO working on this project. In addition, if POA is conducting non-PCT-related in-water work that includes PSOs, the PCT 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.

To improve beluga whale detection, NMFS has worked with the POA to include PSO stations in different locations than the three stations originally proposed by the POA, which were all on POA property. In addition, since publication of the notice of proposed IHAs, the POA has included a fourth monitoring station. One PSO station will be located at the PCT pile driving site. One station will be at Port Woronzof or a similar location, rather than on the POA property, to maximize beluga whale detection outside of Knik Arm and the mouth of Knik Arm. PSOs at this location will have unencumbered views of the entrance to Knik Arm and can provide information on beluga whale group dynamics (*e.g.,* group size, demographics, etc) and behavior of animals approaching Knik Arm in the absence of and during pile driving. We also considered moving a station from the POA property to Port MacKenzie for an improved view of beluga whales moving from north to south within Knik Arm. However, Port MacKenzie is not an available option due to logistical reasons; therefore, the northern station will be located on POA property. A fourth PSO station will be located at Ship Creek.

For both Phase 1 and Phase 2, NMFS is requiring the POA to submit interim weekly and monthly monitoring reports (that include data sheets) during the

PCT construction season. These reports must include a summary of marine mammal species and behavioral observations, pile driving shutdowns or delays, and pile driving work completed. A final end-of season report will be submitted to NMFS within 90 days following pile driving. The report must include: Dates and times (begin and end) of all marine mammal monitoring; a description of daily construction activities, weather parameters and water conditions during each monitoring period; number of marine mammals observed, by species, distances and bearings of each marine mammal observed to the pile being driven or removed, age and sex class, if possible; number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied); description of mitigation implemented, and description of attempts to distinguish between the number of individual animals taken and the number of incidences of take. In addition, any acoustic data and analysis collected throughout the year will also be made available to NMFS in the form of an interim report within 10 days of data collection for 24 to 48-in piles and 72 hours for 144-in piles. The POA will also submit draft and final reports within 60 days of the conclusion of acoustic monitoring each season. Reported metrics will include, but are not limited to, monitoring methods, mean, median, and peak sound source levels (dB re: 1μPa): cumulative sound exposure level (SELcum), peak sound pressure level (SPLpeak), root mean square sound pressure level (SPLrms), and single-strike sound exposure level (SELs-s), spectra, and amount of pile strikes or vibratory hammer duration. In addition, during PCT hydroacoustic monitoring, allin-water work occurring in the area (*e.g.,* dredging, other in-water work at the POA, vessel transit) must be documented (*e.g.,* type of activity, location relative to recordings, date/time) and reported in the acoustic monitoring report.

NMFS has also included reporting requirements for unanticipated situations. In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as serious injury, or mortality, POA must immediately cease the specified activities and report the incident to NMFS. In the event POA discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.,* in less than a moderate state of decomposition), POA must immediately report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS. In addition, in the event that POA discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the specified activities (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), POA must report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS, within 24 hours of the discovery.

Negligible Impact Analyses and Determinations

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 responses (*e.g.,* intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), 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's 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 environmental 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). Below we present our analysis for each IHA.

To avoid repetition, the discussion below applies to all the species listed in Table 11 for which we authorized take, other than CIBWs, for each IHA (*i.e.,* the POA's planned activities for Phase 1 and Phase 2 activities), as the anticipated effects of both Phase 1 and Phase 2 activities on marine mammals 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 CIBWs, or impacts on habitat; therefore, we provide a supplemental analysis for CIBWs, independent of the 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 following factors support negligible impact determinations for the affected stocks of humpback whales, killer whales, harbor porpoise, harbor seals, and Steller sea lions. Some of these also apply to CIBWs; however, a more detailed analysis for CIBWs is provided below.

- No takes by mortality or serious injury are anticipated or authorized;
- The number of total takes (by Level A and Level B harassment) are less than 3 percent of the best available abundance estimates for all stocks;
- Take would not occur in places and/or times where take would be more likely to accrue to impacts on reproduction or survival, such as within ESA-designated or proposed critical habitat, biologically important areas (BIA), or other habitats critical to recruitment or survival (*e.g.,* rookery);
- Take would occur over a short timeframe, being limited to the short duration a marine mammal would likely be present within a Level B harassment zone during pile driving;
- Any impacts to marine mammal habitat from pile driving are temporary and minimal; and
- Take would only occur within upper Cook Inlet—a limited, confined area of any given stock's home range.

For CIBWs, we further discuss our negligible impact findings in the context of potential impacts to this endangered stock. As described in the *Recovery Plan for the Cook Inlet Beluga Whale* (NMFS, 2016), 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 30 feet mean lower low water (9.1 m) and within 5 mi (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 CI beluga whales, (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 CI beluga whales. The PCT would not impact essential features 1–3 listed above. All construction would be done in a manner implementing best management practices to preserve water quality and no work would occur around creek mouths or river systems leading to prey abundance reductions. In addition, no physical structures would restrict passage; however, impacts to the acoustic habitat are of concern. Previous marine mammal monitoring data at the POA demonstrate beluga whales indeed pass by the POA during pile driving. As described above, there was no significant difference in beluga sighting rate with and in the absence of pile driving (Kendell and Cornick, 2015). However, beluga whales do swim faster and in tighter formation in the presence of pile driving (Kendell and Cornick, 2015).

During review of the POA's application, NMFS was concerned that exposure to pile driving at the PCT could result in beluga whales avoiding Knik Arm and thereby not accessing the productive foraging grounds north of POA such as Eagle River flats based on the proposed project and mitigation measures—thus, impacting essential feature number 5 above. Although the data previously presented demonstrate whales are not abandoning the area (*i.e.,* no significant difference in sighting rate with and without pile driving), we considered the results of a recent expert elicitation (EE) at a 2016 workshop, which predicted the impacts of noise on CIBW survival and reproduction given lost foraging opportunities, 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 (2015, section IX.D—CI Beluga Hearing, Vocalization, and Noise Supplement) 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 beluga whales 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 *http://www.smruconsulting.com/publications/* and we provide a summary of the expert elicitation portion of the workshop here.

For each of the noise effect mechanisms chosen for expert elicitation, 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% of its energy intake on that day). Therefore, disturbance in this context is not equivalent to Level B harassment but would represent increased severity compared with Level B harassment as defined in the MMPA. The mitigation measures NMFS has prescribed for the PCT project are designed to avoid the potential that any animal would lose the ability to forage for one or more tidal cycles. While Level B harassment (behavioral disturbance) is authorized, our mitigation measures would 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 first considered proposing the POA shutdown based on more vulnerable life stages (*e.g.,* calf presence) but ultimately determined all beluga whales warranted pile driving shutdown to be protective of potential vulnerable life stages, such as pregnancy, that could not be determined from observations, and to avoid more severe behavioral reaction.

Monitoring data from the POA suggest pile driving does not discourage beluga whales from entering Knik Arm and travelling to critical foraging grounds such as those around Eagle Bay. As previously described, sighting rates were not different in the presence or absence of pile driving. This is 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 beluga whales are responding to pile driving noise but not through abandonment of critical habitat, including primary foraging areas north of the port. Instead, they travel faster past the POA, more quietly, and in tighter groups (which may be linked to the decreased communication patterns). This traveling behavior past the POA has also been verified by acoustic monitoring. Castellote et al. (2020) found low echolocation detection rates in lower Knik Arm indicating belugas moved through that area relatively quickly when entering or exiting the Arm. We anticipate these behaviors to continue, and 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, and tight associations help to mitigate the potential for any contraction of communication space for a group. Finally, as described previously, both telemetry (tagging) and acoustic data suggest beluga whales likely stay in upper Knik Arm for several days or weeks before exiting Knik Arm. Specifically, a beluga instrumented with a satellite link time/depth recorder entered Knik Arm on August 18th and remained in Eagle Bay until September 12th (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 would avoid repetitive exposures from pile driving noise.

NMFS has prescribed mitigation measures beyond those proposed by the POA in the IHA application, specifically, not commencing pile driving if beluga whales are observed within Knik Arm or within 1 km of the mouth of Knik Arm, shutting down pile driving should a beluga whale approach or enter the Level B harassment zone, stationing PSOs at Point Woronzof and Ship Creek, and not vibratory pile driving 144-in piles during August (peak beluga season). These measures are designed to ensure beluga whales 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 PSOs at Point Woronzof allows for detection of beluga whales at much farther distances than previous years and behavioral observations prior to whales entering Knik Arm. Although NMFS does not anticipate beluga whales would abandon entering Knik Arm in the presence of pile driving with the required mitigation measures, these PSOs will be integral to identifying if belugas are potentially altering pathways they would otherwise take in the absence of pile driving. Because the POA is submitting weekly and monthly reports, NMFS will be able to regularly evaluate if the impacts of the project are having a greater than anticipated impact on beluga whales. If we find the project is having a greater than negligible impact on marine mammals, the IHA may be modified or revoked. 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 the activities analyzed under each of these two separate IHAs are not expected to adversely affect CIBWs through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- Area of exposure would be limited to travel corridors. Data demonstrates Level B harassment manifests as increased swim speeds past the POA and tight group formations and not through habitat abandonment;
- No critical foraging grounds (*e.g.* Eagle Bay, Eagle River, Susitna Delta) would be impacted by pile driving; and
- While animals could 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.

We also considered our negligible impact analysis with respect to NMFS' technical report released in January 2020 regarding the abundance and status of CIBWs (Sheldon and Wade, 2019). As described in the marine mammal section, new analysis indicates the CIBW stock is smaller and declining faster than previously recognized. While this is concerning, NMFS continues to believe the taking authorized (allowed for in the cases where shutdowns cannot occur in time to avoid Level B harassment take) will have a negligible impact. The monitoring measures (four stations each equipped with two PSOs simultaneously on watch at each station) are extensive, such that we find it unlikely whales would go undetected. The mitigation measures reduce noise entering the water column (a benefit for all marine mammals) through the use of a confined bubble curtain and noise levels would be verified upon the onset of pile driving to verify estimated harassment zones. Further, the exposure risk to CIBWs is greatly minimized through the incorporation of in-bound and out-bound whale pre-pile driving clearance zones. Finally, should pile driving be occurring at the same time a whale is detected, pile driving would shut down prior to its entering the Level B harassment zone. All these measures, as well as other required measures such as soft-starts, greatly reduce the risk of animals not accessing important foraging areas north of the POA, which could result in impacts to annual rates of recruitment or survival. For these reasons, the new status of CIBWs does not ultimately change our findings with respect to the specified activities.

Phase 1 IHA—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, we find that the total marine mammal take from the POA's construction activities in Phase 1 will have a negligible impact on the affected marine mammal species or stocks.

Phase 2 IHA—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, we find that the total marine mammal take from the POA's construction activities in Phase 2 will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take 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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

For all non-CIBW stocks, for both the Phase 1 and Phase 2 IHAs, the amount of taking is less than one-third of the best available population abundance estimate (in fact it is less than 4 percent for all stocks considered here). Further, 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; therefore, the amount of take authorized likely represents repeat exposures to the same animals. 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.

We provide additional information with respect to CIBW. They are known to enter Knik Arm and then exit after several days of remaining within Knik Arm. There is potential an individual is taken on both ingress and egress; however, due to the mitigation measures (essentially takes are for animals where pile driving cannot be shut down before exposure), the circumstances would have to be such that pile driving is occurring while the whale is both entering and exiting Knik Arm and that the animal is missed or taken due to logistical constraints of shutting down pile driving immediately in both cases.

Phase 1 IHA—Based on the analysis contained herein of the likely effects of the specified activity in Phase 1 on marine mammals and their habitat, and taking into consideration the

implementation of the mitigation and monitoring measures, we find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Phase 2 IHA—Based on the analysis contained herein of the likely effects of the specified activity in Phase 2 on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, we find that small numbers of marine mammals will be taken relative to the populations 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.

No subsistence use of CIBWs occurs 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. However, Steller sea lions are taken for subsistence use in lower Cook Inlet. In 2013 and 2014, the ADF&G conducted studies to document the harvest and use of wild resources by residents of four tribal communities in Cook Inlet: Tyonek, Nanwalek, Port Graham, and Seldovia (Jones and Kostick 2016). Tyonek is the community in closest proximity to Knik Arm while the other communities are located lower in Cook Inlet. The only marine mammal species taken by the Tyonek community was harbor seals (from the McArthur River Flats north to the Beluga River (Jones et al. 2015)- south of Knik Arm) while communities lower in the inlet relied on harbor seals, Steller sea lions and sea otters (we note the sea otter is under the jurisdiction of the USFWS; therefore, it is not a part of our analysis).

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, 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) and the shift would 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 would 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 would be far removed in time and space from any hunting in lower Cook Inlet.

Finally, we have not received any communication from Alaska Natives that this project raises concern regarding their subsistence use. The POA alerted 14 tribal organizations and communities to the notice of proposed IHAs. No tribes commented on or expressed concern over subsistence use during the public comment period for the proposed IHAs.

For all these reasons, relevant to both the Phase 1 and Phase 2 IHAs, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

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

On November 18, 2019, NMFS requested consultation on the issuance of two successive IHAs to the POA authorizing the take of humpback whales (Mexico DPS, Western North Pacific DPS), wDPS Steller sea lions, and CIBWs. On March 23, 2020, NMFS AKR released a Biological Opinion concluding the proposed action would not jeopardize the continued existence of the aforementioned species and would not destroy or adversely modify critical habitat.

National Environmental Policy Act

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

NMFS prepared a draft EA to consider the environmental impacts associated with the issuance of two IHAs which was made available to the public during the public comment period on the proposed IHAs. NMFS' final EA considered comments submitted during the public comment period and found that authorizing take of marine mammals by issuing the IHAs would not result in significant direct, indirect, or cumulative impacts to the human environment. Accordingly, NMFS determined that issuance of the IHAs to the POA would not significantly impact the quality of the human environment and signed a Finding of No Significant Impact (FONSI). NMFS' Final EA and FONSI are available online at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

Authorization

As a result of these determinations, NMFS has issued the two requested IHAs to the POA for the PCT Project, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A copy of the final IHAs can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

Dated: April 1, 2020.

Donna S. Wieting,

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

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