Draft Supplemental Environmental Assessment on the Issuance of an Incidental Harassment Authorization and Subsequent Rulemaking for Take of Small Numbers of Marine Mammals Incidental to the Port of Anchorage Terminal Redevelopment Project, Anchorage, Alaska

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INTRODUCTION

In November 2005, the National Marine Fisheries Service (NMFS) Office of Protected Resources (OPR) Permits, Conservation and Education Division (herein after "Permits Division) received an application from the Port of Anchorage (herein after "POA") and the U.S. Department of Transportation Maritime Administration (herein after "MARAD") for authorization to take marine mammals incidental from Phase 1 activities associated with the POA's Marine Terminal Redevelopment Project (herein after "MTRP"), Anchorage, Alaska. In a supplemental letter, the POA modified the methods of construction for Phase 1 of the MTRP (e.g., dike construction, fill placement and compaction) such that they would occur entirely from land and requested that NMFS concur with their determination that take of marine mammals is not likely to occur and an incidental harassment authorization (IHA) is not necessary pursuant to 101(a)(5)(A) or (D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 USC 1361 *et seq.*) On May 9, 2006, NMFS concurred with this determination if certain operational procedures were met. Subsequently, on October 4, 2007, NMFS concurred with the POA's determination that dike construction and pile driving associated with a test pile project would also not result in the take of marine mammals if certain mitigation and monitoring measures were set in place. However, NMFS advised the POA/MARAD that pile driving during Phase II of the MTRP may require a MMPA authorization.

As such, on February 20, 2008, NMFS' Permits Division received a complete application from the POA/MARAD for an incidental take authorization for Phase II in-water pile driving activities. In response, NMFS determined that the MTRP activities planned for the first year of in-water pile driving, with the implementation of the required mitigation measures, would have a negligible impact on affected species and stocks and therefore issued the POA/MARAD a one-year IHA authorizing incidental take of marine mammals from pile driving on July 15, 2008. Because NMFS' action of issuing an IHA is considered a major federal action, NMFS complied with the National Environmental Policy Act (NEPA), implementing regulations, and NOAA implementing procedures and prepared an *Environmental Assessment (EA) on the Issuance of an Incidental Harassment Authorization and Subsequent Rulemaking for Take of Small Numbers of Marine Mammals Incidental to the POA of Anchorage Terminal Redevelopment Project, Anchorage, Alaska* (hereinafter "2008 EA"). On July 14, 2008, NMFS reached a Finding of No Significant Impact (FONSI) for the proposed issuance of the 2008 IHA. The IHA, which expires on July 14, 2009, authorizes the take, by Level B harassment only, of 34 Cook Inlet beluga whales (*Delphinapterus leucas*), 20 harbor seals (*Phoca vitulina*), 20 harbor porpoises (*Phocoena phocoena*), and 20 killer whales (*Orcinus orca*). Since issuance of the IHA, NMFS has taken two major actions regarding Cook Inlet beluga whales. On October 22, 2008, NMFS issued a final rule listing this population as endangered under the ESA (73 FR 69219). This listing status became effective on December 22, 2008. In addition, NMFS issued a Final Conservation Plan for the Cook Inlet Beluga Whale (herein after "Conservation Plan") in October 2008.

As anticipated, on November 20, 2008, the NMFS Permits Division received a complete application pursuant to 101(a)(5)(A) of the MMPA and implementing regulations (50 CFR

216.104), requesting a rulemaking and subsequent Letters of Authorization (LOAs) authorizing the take, by Level B harassment only, of small numbers of marine mammals incidental to the MTRP. The POA/MARAD also submitted a Demolition Plan to NMFS on January 30, 2009 in response to NMFS' questions about this activity (the Demolition Plan is considered part of the application). In response to the application, NMFS has now proposed issuing 5-year regulations to the POA/MARAD as the MTRP is scheduled to be on-going to 2014 and beyond.

The following timeline outlines important dates related to this action:

- **May 6, 2006**- NMFS concurs with the POA's determination that Phase 1 of the MTRP will not result in takes of marine mammals if certain operational procedures are met and mitigation and monitoring measures are set in place.
- **October 4, 2007**- NMFS concurs with the POA's determination that Phase II dike construction and test pile project will not result in takes of marine mammals if certain operational procedures are met and mitigation and monitoring measures are set in place.
- **February 20, 2008**- NMFS receives a complete application from the POA/MARAD for a one-year IHA with intent to apply for subsequent regulations and LOAs for the taking of marine mammals incidental to the MTRP.
- **March 18, 2008**- Notice of Proposed IHA publishes in the *Federal Register* (73 FR 14443).
- **July 14, 2008**- NMFS finalizes the EA on the issuance of incidental take authorizations to the POA/MARAD for the MTRP and issued a FONSI for IHA.
- **July 15, 2008**- NMFS issues IHA to the POA/MARAD for the taking, by Level B harassment, of marine mammals incidental to the MTRP.
- **July 18, 2008**- Notice of Issuance for IHA publishes in the *Federal Register* (73 FR 41318).
- **October 22, 2008**- NMFS issues a final rule listing Cook Inlet beluga whales as endangered under the ESA and announces availability of the *Conservation Plan for the Cook Inlet Beluga Whale (Delphinapterus leucas)* (73 FR 69219). This listing status became effective on December 22, 2008.
- **November 20, 2000**- NMFS receives an application from the POA/MARAD for regulations and subsequent LOAs for the taking of marine mammals incidental to the MTRP.

- **December 18, 2008**- Notice of Receipt of Application for regulations and subsequent LOAs published in *Federal Register* (73 FR 77013).

The LOA application included new information that warrants additional analysis under NEPA, including, among other things, information on the demolition process of the existing dock, detailed marine mammal quantitative take calculations, results from marine mammal monitoring conducted under the IHA, results of a robust acoustic study, and proposed additional mitigation; therefore, this SEA is warranted. As in the 2008 EA, this Draft SEA is intended to analyze the issuance of MMPA incidental take authorizations for the entire MTRP including

consideration of potential future incidental take authorizations beyond the proposed regulations, as in-water construction may proceed past expiration of the currently proposed regulations and future incidental take authorization may be requested from NMFS.

Table 1 below outlines the comparisons between NMFS' 2008 EA and this SEA. All of the analysis in the original EA is incorporated by reference into this document. This supplemental EA (SEA) provides specific additional analysis:

- Analyzing effects of the MTRP on Cook Inlet beluga whales as an endangered species;
- Analysis of the effects associated with an additional proposed MTRP activity (i.e., demolition of the existing dock);
- Presentation of updated quantitative take calculations as they relate to effects on species and stocks;
- An update to the Level B acoustic harassment threshold for non-pulsed noises (e.g., vibratory pile driving) and the associated isopleth distances for this activity; and
- Consideration of monitoring reports to date to consider action-specific information on effects to marine mammals.

Table 1: A comparison between this Draft SEA and NMFS' 2008 EA (2008 EA is incorporated by reference).

Section	SEA	NMFS' 2008 EA
Purpose and Need/ Proposed Action	Updated proposed incidental take authorization to include consideration of demolition of the existing dock, a revised pile driving schedule and updated calculations for the number of Level B harassment incidents proposed for authorization. .	Covered all proposed specified activities (MMPA; 16 U.S.C 1361 *et seq.*; 50 CFR Part 216) except demolition of the existing dock; Consideration of effects on marine mammals included calculated and proposed take numbers specific for the effective dates of the IHA (July 15, 2008-July 14, 2009). Outyear assessment of effects to marine mammals was considered qualitatively assuming approximately similar numbers of takes would be authorized.
Alternatives	Alternative 1 and 2 incorporated by reference but with an update to Level B harassment threshold (to 125 dB rms) from vibratory pile driving in Alt. 2; update Level B acoustic harassment isopleth distances for vibratory pile driving to reflect the 125 dB distance, as derived from a 2008 acoustic survey; included Alternative 3: Alternative Considered But Eliminated for further clarification of NMFS' early involvement with this project.	Alternative 1 and 2 evaluated. Alt. 2 defined Level B harassment threshold for vibratory pile driving as 120dB rms which resulted in a harassment isopleth of 800m, as derived from a 2007 acoustic study.

Section	SEA	NMFS' 2008 EA
Affected Environment	Update Cook Inlet beluga whale status from proposed for listing to listed as endangered under the ESA(16 U.S.C. 1531 *et seq*. 50 CFR Part 222-226); Update habitat classification for the action area based on the recently-issued beluga whale Conservation Plan.	Affected environment includes biological (e.g., marine mammals, fish) and physical (i.e., action area) environment.
Environmental Consequences	Pile driving is expected to have the same environmental consequences as analyzed in the NMFS 2008 EA. However, because the POA is now adding demolition of the dock as an action and has provided a more precise pile driving schedule, this Draft SEA specifically considers the potential environmental consequences for these activities. In addition, this Draft SEA includes an analysis based on the monitoring reports to date. All other aspects of NMFS' 2008 EA's analysis are incorporated by reference.	(1) Pile Driving: Pile driving releases noise into the aquatic environment which may, if exposed, result in behavioral harassment of marine mammals. Effects from noise could include, but not limited to, short term hearing impairment, altered headings, change in swim speed and dive durations, masking, shift in vocalizations to compensate for masking, and hormonal stress response. (2) Destruction/Alteration of Habitat The MTRP design involves the fill of 135 acres of intertidal and subtidal habitat for the creation of useable land and increased number of dock terminals. However, alteration of habitat is not expected to have an unmitigable adverse impact to habitat of marine mammals, including change in prey availability.

Section	SEA	NMFS' 2008 EA
Cumulative Impacts	Updated to include impacts from proposed scientific research permits and incidental harassment authorizations.	Natural mortality and anthropogenic stressors (e.g., subsistence use, pollution, disease, habitat degradation, coastal development, and scientific research) are likely to have some level of impact on marine mammal populations. However, the mitigation measures incorporated in the incidental take authorizations would ensure that impact from the MTRP would contribute a negligible increment over or above the baseline activities currently occurring in the marine environment of the proposed action area. While the effects of repeated or chronic disturbance any anthropogenic source should not be dismissed, the potential benefits of information gained from the research projects and monitoring reports associated with the MTRP outweigh what is likely an overall small increase of low level harassment events.
Mitigation and Monitoring	Incorporated by reference. Add mitigation for demolition options and update monitoring of Level B harassment zone isopleth for vibratory pile driving.	Included mitigation, monitoring, and reporting requirements.

Scope of the SEA

Summarizing from the table above, this SEA focuses on:

1. Updating the affected environment to address the change in species status of Cook Inlet beluga whales from proposed for listing to listed as endangered under the ESA.
2. Updating the affected environment to reflect the revised habitat classification for the action area as described in the Conservation Plan.
3. Including demolition of the dock as a component of the applicants' specified activity and NMFS proposed authorization and updating the NMFS' proposed action to consider the applicants' proposed pile driving schedule.
4. Including analysis of a change in Level B threshold level for vibratory pile driving (from 120 dB to 125 dB) and updating the harassment isopleth distance based on a site-specific 2008 acoustic study.
5. Updating environmental consequences to analyze impacts from demolition of the existing dock, effects to Cook Inlet beluga whales relative to their status as an ESA-listed species,

consideration of the habitat classification of the action area, and analyzing marine mammal monitoring reports to date.

6. Including and analyzing additional mitigation measures for demolition of the existing dock.

CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1. DESCRIPTION OF ACTION

1.1.1 Proposed Action

In response to a November 20, 2008 application from the POA/MARAD, NMFS proposes issuance of regulations governing the take of small numbers of marine mammals incidental to the POA's MTRP in Anchorage, Alaska. The MTRP includes expanding the current POA by 135 acres and replacing and expanding the current dock to accommodate additional berths. Construction activities which have the potential to harass marine mammals include in-water pile driving and demolition of the existing dock. Species which could potentially be taken from the MTRP include the Cook Inlet beluga whale (*Delphinapterus leucas*), harbor seal (*Phoca vitulina*), harbor porpoise (*Phocoena phocoena*), and killer whale (*Orcinus orca*).

As background, in response to a previous application for this activity, NMFS issued a one-year IHA to the POA/MARAD for takes of marine mammals incidental to the MTRP (73 FR 41318, July 18, 2008) (hereinafter "2008 IHA"). While the intent to promulgate regulations was included in the March 18, 2008 *Federal Register* notice for the proposed IHA (73 FR 14443) and was analyzed in NMFS 2008 EA; the POA/MARAD's November 2008 application for regulations and subsequent Letters of Authorization (LOAs) updated certain specified activities for which incidental take authorization is requested. NMFS' proposed action remains essentially the same as that analyzed in the 2008 EA, namely, the take, by Level B harassment only, of small number of marine mammals incidental to the MTRP. However, the November 2008 application updated information on the applicants' pile driving schedule, proposed Level B harassment threshold for non-pulse noise (e.g., vibratory pile driving), calculated marine mammal Level B harassment take numbers, and it provided new information pertaining to the activity of demolishing the existing dock and its associated impacts to marine mammals and their habitat and data from marine mammal monitoring required under the IHA. In addition to marine mammal monitoring reports, NMFS received a *2008 Underwater Noise Survey During Construction Pile Driving* report from the POA/MARAD. Therefore, NMFS proposed action is similarly updated to include this information.

Pursuant to the NEPA, this Draft SEA supplements the 2008 analysis of potential impacts to the human environment that may result from the proposed action of NMFS issuance of incidental take authorization regulations under the MMPA to POA/MARAD for the in-water construction activities (specifically in-water pile driving and demolition of the existing dock structure) for the MTRP for the period July 2009 through July 2014. In keeping with the 2008 EA analysis of the complete MTRP in-water construction timeframe, this SEA considers the proposed action of authorizations that may be required subsequent to 2014, although a specific authorization request has appropriately not yet been submitted for this future activity.

1.1.2 Purpose and Need

The purpose and need of the proposed action (i.e., issuance of incidental take regulations and subsequent LOAs) is to ensure POA/MARAD compliance with the MMPA and its implementing regulations. All background information on the purpose and need for this action is contained in the 2008 EA and is incorporated here by reference. In summary, the purpose of the proposed action is compliance with the MMPA via NMFS' issuance of 5- year regulations to the POA/MARAD authorizing the take, by Level B harassment only, of marine mammals incidental to the MTRP.

1.1.3 SEA Focus

The 2008 EA analyzed impacts to all potentially affected marine mammal species present in lower Knik Arm and their habitats, with particular focus on Cook Inlet beluga whales as this is the most abundant species in the vicinity of the POA. Due to the change in ESA status of Cook Inlet beluga whale (*Delphinapterus leucas*) from proposed for listing under the ESA to listed as endangered, this SEA also appropriately focuses on impacts to Cook Inlet beluga whales and their habitat with respect to the update in proposed activities and other issues described in Table 1. As summarized in Table 1, the November 2008 POA/MARAD application provided information relevant for NMFS' analysis of environmental consequences in this SEA, including results from two requirements of the 2008 IHA: 1) a pile driving acoustic study conducted in 2008 and 2) information provided in monitoring reports.

1.1.4 Other Applicable Laws

The 2008 EA summarizes other applicable key federal laws pertaining to the MTRP, as described in more detail in Section 1.6 of this SEA.

1.2. OBJECTIVES OF THE MARINE TERMINAL REDEVELOPMENT PROJECT

All objectives of the MTRP remain the same as presented in the 2008 EA and are incorporated here by reference. However, the POA/MARAD's November 2008 application to NMFS contains information more specifically describing the number of pile driving hours needed per year to implement the open cell sheet pile (OCSP) design plan and a summary of the need to demolish the existing dock. The Demolition Plan included details of options for this activity (including proposed mitigation measures).

1.2.1 Open Cell Sheet Pile Installation Process

The 2008 EA provides an account of the applicant's description of how sheet piles would be installed. The November 2008 application provided more detail on this process, including a description of "dropping" and using a hairpin weight during the stabbing phase. Neither of the two methods requires a pile hammer and, therefore, noise emitted into the aquatic environment

during these phases is less than that of impact or vibratory pile driving. The following is a summary of the OCSP installation process, as described in the application.

1. Temporary pipe piles will be required to support the sheet pile driving templates during construction of each cell face. These temporary pipe piles are 30-36 inches in diameter and up to 80 ft long in the -45 ft berths and up to 70 ft long in the -35 ft berths. For each sheet pile template, two to four pipe piles will be temporarily placed, embedded 5-10 ft into the seabed or fill slope. Temporary piles are typically driven using a vibratory hammer.

2. A steel template, shaped according to the face curvature of the cell, is placed on the temporary piles. This template is leveled and then temporarily welded in place. Walkways are installed extending from the fill to the template to allow personnel access. The walkway also serves as a template for the initial portion of the tail wall.

3. A sheet pile is picked up by a crane and threaded onto the wye connector of the adjacent cell (already completed) or into the previously placed sheet pile. The sheet pile is threaded until the "tip" (bottom edge) of the sheet reaches the fill or seabed to ensure a proper fit and to make sure that the bottom of the sheet pile is in line with the plan location (e.g. "tip elevation"). The crane then lifts the sheet pile several feet and allows the sheet pile to drop. The momentum of the sheet pile drives the tip into the embankment or seabed. This is the procedure that gives rise to the term "stabbing." Stabbing can also be carried out using a "hairpin weight" (a steel weight approximately 3 ft long [shaped like a hairpin] is set over the top of the sheet pile and then raised and dropped to drive the sheet in further) or low energy vibratory pile driving (i.e., the hammer does not operate at full energy) when soil conditions are such that the dropping method is not sufficient to embed the pile to desired depth. To date, dropping and use of the hairpin weight method have been sufficient to drive piles to desired depth during stabbing (i.e., a vibratory hammer has not been used during this phase).

4. During portions of the stabbing process, shut down for purposes of mitigating sound exposure of marine mammals may not be practicable due to safety concerns of nearby personnel. If the sheet pile wall is not secured in soil at the bottom, it could break free, especially during periods of stronger winds or currents, creating a safety hazard to sheet pile or other workers. As stated above, the stabbing process involves either the dropping, hairpin weight, and possibly reduced energy vibratory pile driving although this latter method has not been used yet.

6. Once the sheet pile has been placed, temporary welds are used to secure the sheet to the template to maintain the alignment. Depending on the length of the sheets and existing tide, current and wind conditions, temporary welds may not be used on every sheet pile.

7. The adjacent sheet is threaded onto the interlock of the previous sheet and previous steps repeated. This procedure continues until one half of a cell face (8 or 9 sheet piles) or a full set of 17 sheet piles and the connecting wye are in place.

8. Once a “set” (of face sheets) is stabilized against the template, the sheets are driven using either a vibratory or impact hammer. The type of hammer used depends on subsurface conditions and the effort required to advance the sheet pile to final bury elevation. To maintain proper alignment of the advancing tip and to provide lateral stability to the sheet pile, the difference between the top of adjacent sheets can be no more that 5 ft at any time. Therefore, the sheets will be methodically driven in a stair-step pattern and the hammer will move back and forth along the cell until all sheets are driven to depth.

9. Pile driving is intermittent and not continuous throughout the day. This stair step driving pattern and continuous movement of equipment results in short intervals of actual driving time. Under conditions where the impact hammer is being used, driving takes place from less than 1 minute to 17 minutes (averaging 6 minutes), followed by a period of no driving when the hammer is relocated (between 3 and 15 minutes). For the vibratory hammer, driving is in progress from less than 1 and up to 8 minutes (averaging 1.5 minutes) followed by a 1 to 5 minute period with no driving, while the vibratory hammer is moved and reset. Actual driving time is determined by local soil conditions. Where driving conditions allow, two or three adjacent sheet piles may be driven simultaneously (the grips on the vibratory hammer allow one or two sheets to be driven at a time, the grips on the impact hammer allow up to three sheets to be driven at a time). Depending on the length of the sheet pile being driven and soil conditions at the specific location, either hammer or both hammers may be used on any one sheet pile or set of sheet piles.

10. The “wye connector piles” connect tail walls to face walls. Wye connector piles are driven by vibratory hammer due to their shape.

11. Primary tail wall sheets adjacent to the cell face and within the submerged or tidally influenced area are set using the walkways as a template and driven as described in the preceding steps. Adjacent tail wall piles are generally set and driven concurrent with the adjoining face sheets.

12. Once the face sheets and adjacent tail wall sheets approach final elevation, the temporary piles and template are removed. Driving of sheet pile to final elevation is accomplished after the template is removed. Once the face and primary tail wall sheets are driven to final elevation, fill is placed within the cell. The temporary piles and template are set up for the next cell in the sequence and the process is repeated. Multiple templates are used so the process can proceed in a “leapfrog” fashion and/or be conducted at different locations simultaneously. Construction may proceed on three to four adjacent cells at the same time.

13. Tail wall sheet pile that are contained completely within the upland fill do not require a driving template and are installed using land-based pile driving operations; some trenching may be required in the fill to accommodate installation of the various sheet heights for the tail walls. Under some conditions, water may enter into excavated tail wall trenches behind the face; when water is present, tail wall construction will be considered as in-water work unless acquired in-water sound measurements demonstrate that there is no potential impact to marine life. To the

extent practicable, construction methods will be employed to reduce the amount of in-water pile driving required for tail wall installation.

1.2.2 Pile Driving Schedule

Two hammer-based methods are currently used to install piles as analyzed in the 2008 EA and would continue: vibratory and impact pile driving. An impact hammer is a large metal ram that is usually attached to a crane. A vertical support holds the pile in place and the ram is dropped or forced downward. The energy is then transferred to the pile which is driven into the seabed. The ram is typically lifted by mechanical, air steam, diesel, or hydraulic power sources. The POA/MARAD have indicated that an impact hammer similar to Delmag D30-42 diesel, 13,751 lb hammer with a maximum rated energy of 101 kilojoules (kj) will likely be used; however, this may be slightly altered based on the contractor.

Vibratory hammers install hammers by applying a rapidly alternating force to the pile by rotating eccentric weights about shafts, resulting in a downward vibratory force on the pile. Vibratory hammers are attached to the pile head with a clamp and are usually hydraulically powered. The vertical vibration in the pile disturbs or "liquefies" the soil next to the pile causing the soil particles to lose their frictional grip of the pile. The pile moves downward under its own weight plus the weight of the hammer. This method is very effective for non-displacement piles such as sheet piles, H-beams, and open-end pile or caissons.

The type of hammer used depends on subsurface conditions and the effort required to advance the sheet pile to final elevation. Based upon currently available information and 2008 activities, the POA/MARAD estimate that a vibratory pile driver will be used approximately 75 percent of the time, and an impact hammer for the remaining 25 percent of time.
The estimated number of pile driving hours, by method, per year is outlined in Table 2.

Table 2: Pile driving location, timeline, and estimated hours for the Port of Anchorage Marine Terminal Redevelopment Project: 2009-2014.

Year	Location	Pile Type	Number of Piles	Hours of Vibratory Pile Driving	Hours of Impact Pile Driving
2009	Barge Berth	fender pile	11	8	3
	North Extension	OCSP	4,106	496	235
		temporary pile	268	17	0
2010	North Extension	fender pile	82	46	15
	South Extension	OCSP	1,831	216	103
		temporary pile	145	9	0

		fender pile	36	20	7
2011	North Replacement	OCSP	2,718	325	155
		temporary pile	145	9	0
2012	North Replacement	OCSP	2,718	325	155
		temporary pile	145	9	0
	South Replacement	OCSP	3,034	366	173
		temporary pile	163	10	0
2013	North Replacement	fender pile	94	53	18
	South Replacement	OCSP	3,034	366	173
		temporary pile	163	10	0
Prior to July 15, 2014	South Replacement	fender pile	41	23	8
Post July 15, 2014	South Replacement	fender pile	41	23	8
TOTAL				**2,331**	**1053**

1.2.3 Dock Demolition

Demolition of the existing, active dock is currently scheduled in two phases proposed to begin in 2010 and could continue intermittently through 2013, depending on the demolition approach and sequencing selected. Phase 1 of dock demolition, scheduled for 2010/2011, will focus on the northern portion of the existing dock (approximately 175,000 sq ft) and includes Terminals 2 and 3. Phase 2 would include the southern portion of the dock (approximately 225,000 sq ft) which is scheduled for demolition during 2011/2012. Phase 2 includes Terminal 1 and the petroleum, oils, and lubricants (POL) Terminal 1 and 2. The existing dock is inside the footprint of the planned Marine Terminal Redevelopment Project; therefore, all concrete debris from demolition would be in areas already planned to be filled in during the construction of the new dock. All demolition activities would be subjected to appropriate marine mammal mitigation measures (see Mitigation section).

The existing dock encompasses approximately 400,000 sq ft of surface area and is comprised of an 18 to 24-inch thick steel reinforced concrete deck supported by over 4,000 steel piles. Select structural portions of the concrete deck are up to 3½ to 4 feet thick. Pile diameters range from 24 to 48 inches with a wall thickness of 7/16 inch and are filled with gravel. The existing dock structure includes three obsolete container cranes, a three-story combination administration building and warehouse at the southern portion of the dock, steel trestles, catwalks, fuel piping, and miscellaneous utility appurtenances. POA expansion activities will

include the demolition of the existing dock structure to allow the placement of gravel fill to extend the functional wharf line approximately 400 feet beyond the existing dock face.

As part of the LOA application, POA/MARAD submitted a Demolition Plan to NMFS which outlines three potential methods for demolition and identifies mitigation measures for each option (this can be found on the NMFS website listed above). These include (1) in-water demolition by mechanical means using chipping hammers, (2) out-of-water demolition using mechanical means and explosives, and (3) out-of-water demolition by mechanical means only. Demolition approaches for removal of the existing dock structures were reviewed with regard to technical feasibility, cost, and ability to minimize Level B takes of marine mammals in the Knik Arm. Note that the most economical and shortest duration approach includes combining mechanical and blasting means in-water during winter months, however, the potential adverse effects to marine mammals of blasting in-water would necessitate extensive mitigation, as advised by NMFS. Therefore, POA/MARAD eliminated blasting in-water from further consideration.

The specific method of choice can not be determined at this time due to the need for flexibility in the construction bidding process and to facilitate integration of the demolition work into the other components of the MTRP, therefore, all three methods are proposed for regulations with appropriate, respective mitigation. A detailed description of methodology can be found in the POA's Demolition Plan posted on the NMFS website listed above and are summarized here.

<u>In-Water Demolition by Mechanical Means Only- Option 1</u>

Option 1 dock demolition by mechanical means requires breaking or sawing the existing concrete away from the steel support structure and cutting or breaking the steel piles in summer and winter. Concrete demolition would be accomplished using hydraulic chipping hammers, concrete cutter jaws and crushers, and shears mounted to large tracked excavators. Additional equipment would be used to grab, cut, or load salvaged steel during demolition activities. Demolition of the reinforced concrete deck would be performed by excavators working from the surface of the deck. Large excavators with hydraulic hammers or concrete jaws would chip or break the concrete away from the steel support structure and internal reinforcing steel. The concrete would be broken into small pieces and dropped by gravity to the sea floor below, well within the final MTRP footprint. The concrete debris on the sea floor would be encapsulated with clean fill material and left in place. Alternately, a subcontractor may choose to saw cut the concrete deck into sections and use cranes or large excavators to remove the sections and transport them to shore for further demolition. Concrete would be crushed for use as aggregate elsewhere in the MTRP. Deck demolition work would begin at the furthest point (waterside) moving toward the shore, and then along access trestles until the final demolition areas are accessible from land. Metal reinforcing steel debris would be segregated and removed with additional excavators and loaded into trucks for removal and recycling. The concrete deck demolition and salvaging of reinforcing steel could occur during any tidal stage.

Steel piles would be cut or broken using heavy equipment as the concrete deck is removed or additional clean granular fill may be placed in the dock area, if necessary, to allow equipment access to remove the remaining steel piles from below the dock. During lower tides the steel piles would be cut using large track mounted excavators with shear attachments or simply bent and broken at least 10 feet below finish grade using excavators with buckets. An alternate access for removal of the steel pile would require use of a tug and barge to approach from the waterside and remove the steel pile after the deck demolition is complete. Salvaged portions of the piles would be removed for recycling. The concrete debris and remaining portions of steel pile would later be encapsulated with clean fill during the construction of the expanded wharf.

Phases 1 and 2 of Option 1 could be accomplished either in the winter or in the summer with demolition during the winter being the preferred option. Total demolition activities for Phase 1 (northern portion) are anticipated to continue for duration of approximately 960 hours (60 hours/week x 16 weeks). Demolition of Phase 2 structures (southern portion) is anticipated to take approximately 1,320 hours (60 hours/week x 22 weeks). Concrete demolition activities would be conducted continuously throughout each day; however, steel pile demolition may be limited to low tide durations for ground access. Both portions of work would likely be performed concurrently, although a portion of the concrete deck must be demolished before steel pile demolition can begin, and steel pile demolition may be limited to low tide intervals.

The primary source of in-water sound is anticipated to be vibration from chipping hammers transmitted into the water through the steel piles. Chipping may be similar to vibratory pile driving, but these hammers operate at 19% less horsepower (i.e., lower energy) than the vibratory hammer and; therefore, are quieter. In addition, because of the considerable structural mass of concrete that the vibrations would pass through prior to reaching the water, the energy is expected to attenuate to a minimal level. Hydraulic crushers are quieter than the chipping hammers. Other cutting tools, such as shears and cutter jaws operate in short duration at low energy and also do not impart energy directly to the water column or sea floor. Despite demolition activities being quieter than pile driving, the POA has proposed to implement the same harassment and safety zones as vibratory pile driving to determine the requested number of takes of marine mammals.

Out-of-Water Demolition by Mechanical and Blasting Means- Option 2

Option 2 is comprised of two parts: 1) construct a dike (which acts like a cofferdam) around the existing dock during the summer; and 2) demolish the dock in the winter. The construction of a granular fill dike along the outer limits of the proposed POA expansion area would isolate the existing dock from marine waters allowing demolition to be accomplished out-of-water with a 300-foot land barrier to demolition activities. The dike constructed would be inside the footprint of the area already planned and permitted to be filled in with soil to build the future new dock. The sequence of the filling operations would simply be modified to construct the dike first, demolish the dock, and then complete the remainder of the fill. Dike construction would not result in any additional dewatering or habitat loss.

De-watered dikes/cofferdams represent the most effective way of reducing sound created by in-water demolition into the water column, because, once the dike is installed, the demolition activities are completely decoupled from the surrounding water column. Phase 1 dike construction would begin in the spring to early summer 2011; Phase 2 dike construction is scheduled to begin in spring or summer 2012.

This option would require the construction of approximately 2,600 linear feet (LF) of granular fill dike prior to Phase 1 demolition and approximately 2,300 LF prior to Phase 2. The dike would be constructed to an elevation above the highest anticipated tide elevation, would be up to 100 feet wide at the top with approximately 2:1 side slopes. The dike would be constructed of clean granular fill placed by off-road dump trucks and bulldozers and compacted with vibratory rollers, similar to fill activities currently under way. After completion of the dike the contained water will be removed to a depth sufficient to access the limits of the demolition area from below. The proposed dike would be constructed in accordance with current permit conditions with regard to fish protection and provide fish escapement and/or rescue and release from entrapment. Summer construction of the dike would be necessary for proper fill placement and compaction and is anticipated to take approximately five months. After dike completion, the dock will be set back approximately 300 feet inland from the water line. Marine mammal observers in place for pile driving would monitor the dike construction area. Keeping in line with mitigation in the IHA and 2006 and 2007 Letters of Concurrence, should a marine mammal come with in 50 m (164 ft) of dike construction activities, operations would be suspended. Construction activities would not resume until the animal(s) have left the area or have not been resighted within 15 minutes.

Once the dike is completely constructed to accommodate a specific phase of demolition, the applicable concrete deck structure would then be demolished or partly demolished in sections using precision charges (blasting) to break or loosen the concrete. Blasting would expedite the demolition of the concrete structure and will allow for easier handling and removal of concrete and steel debris using mechanical equipment such as track mounted excavators and dump trucks working from an adjacent section of the deck structure or from below.

Blasting would be out-of-water (approximately 300 ft from the water behind a dike) and entail a series of controlled events or shots to demolish the deck in a predetermined sequence of sections. It is anticipated that the dock would be segregated into approximately 30 linear foot sections and that there will be one blasting event for each section (i.e., 30 blasting events total). On average, there would be one blasting event per day. Noise generated at the immediate blast source during dock demolition activities is anticipated to be no greater than 110 dB in air. This sound level is based upon the estimated charge size and configuration as discussed in the Demolition Plan. Results of sound levels in water from out-of-water blasting from pier demolition are discussed in section 4.2.3.3. The impulse sound is expected to dissipate rapidly from the source and all noise generated from blasting activities will conform to the City of Anchorage Noise Control Ordinance (see Appendix B in Demolition Plan). The Anchorage

Noise Control Ordinance allows 100, 10, 1 impulses (blast events) to sound limits of 125, 135, and 145 dBA, respectively during a 24-hour period.

As standard blasting contractor practice, prior to the commencement of blast demolition, a controlled test blast will be performed on a portion (approximately 1/8) of the first section to verify the blast design and to monitor ground vibration, air overpressure, and water overpressure. Three hydrophones would be used to measure water overpressures outside of the dike structure and three geophones would be used to measure air overpressure along the mainland. Data obtained from the test blast will be extrapolated to model a full section blast. If data from the test blast indicate a potential for noncompliance, the blast design would be modified and a new test blast would be performed. Data will also be collected during each section blast to verify conformance with all applicable sound and air overpressure requirements and to determine if demolition activities require modification. The POA/MARAD Demolition Plan proposed that if this method is used for dock demolition, they will monitor for marine mammals thirty minutes prior to detonation and suspend action if any marine mammal is sighted within the action area (see Chapter 5, below).

After a portion of the concrete deck is fully removed from the steel support piles, an excavator with a bucket and thumb or shear attachment would break or cut and remove the piles to a point at least 10 feet below the design finish grade in the area of the existing dock. The removed portion of each pile would be salvaged for recycling and the remaining portion would be left in place and encapsulated in fill. For safety reasons, blasting would not occur at the same time as the mechanical salvaging or pile driving work.

Out-of-Water Demolition by Mechanical Means Only- Option 3

Option 3 is similar to Option 2, except that blasting would not be a means used for demolition. Option 3 is comprised of two parts: 1) construct a dike around the existing dock in the summer; and 2) demolish the dock in the winter. Total demolition activities for Phase 1 and Phase 2 would be anticipated to continue for the same time as Option 1 (i.e., 960 and 1,320 hours, respectively). Dike construction for Option 3 would follow the same process described in Option 2 above. Concrete and steel pile demolition activities via mechanical means only would be conducted continuously throughout each day. As in Option 2, construction of an earthen dike to isolate the demolition work provides the primary advantage that all demolition work would be conducted out of water. This allows the demolition subcontractor the ability to work during all tidal stages and provides a buffer zone of approximately 300 feet between demolition work and the marine waters. The same monitoring and mitigation for dike construction as in Option 2 would apply here. All mechanical activities (e.g., chipping) would be done out-of-water with a 300 ft. land barrier between the dock and the water; therefore, this method of dock demolition is not likely to release noise into the marine environment above NMFS harassment threshold levels and would not require marine mammal monitoring.

1.3. OTHER EA/EISs THAT INFLUENCE SCOPE OF THIS SEA

In compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.), NMFS prepared the aforementioned EA in 2008 for the proposed action. Due to dissemination of new information regarding the applicants' proposed activities and associated mitigation, NMFS is now supplementing the 2008 EA. All other information regarding documents referenced in the 2008 EA are also applicable here.

1.4. DECISION AND OTHER AGENCIES INVOLVED IN THIS ANALYSIS

As described in the 2008 EA, NMFS OPR collaborated with NMFS Alaska Regional Office (AKR) on the proposed action as they are experts in beluga whale biology and ecology. NMFS remains committed to the recovery of Cook Inlet beluga whales and will continue to work with the POA/MARAD as the MTRP progresses. The POA/MARAD maintains the necessary permits issued by other agencies regarding environmental and social resources. Therefore, the information contained in the EA regarding other agencies involved in the POA/MARAD activity and analysis is incorporated here by reference.

1.5. SCOPING SUMMARY

NMFS intent to promulgate regulations was included in the March 18, 2008 Federal Register notice of the proposed IHA (73 FR 14443, March 18, 2008). In addition, NMFS redistributed a notice of receipt of application and solicitation for public comments on the November 2008 application (73 FR 77013, December 18, 2008) for regulations, in particular given the fact that the application contained the additional information described in Section 1.2. Comments received on the December 2008 notice of receipt of application were similar, if not identical, to public comments received on NMFS' proposed IHA notice. NMFS thoroughly addressed all comments on the proposed IHA in its *Federal Register* Notice of Issuance of the IHA (73 FR 41318, July 18, 2008) and summarized those responses in the Scoping Summary section of the 2008 EA, which is incorporated by reference here. NMFS also received comments pertaining to NMFS' 2008 EA and associated FONSI during the pubic comment period on the application. This Draft SEA will be made available for comment during the 30 day public comment period on the proposed regulations.

1.6 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

The 2008 EA provides an overview of the applicable laws and permits most directly applicable to NMFS' proposed action of issuance of MMPA incidental take authorizations, in particular a description of the MMPA and NEPA. That document addresses requirements under Section 7 of the ESA, as Cook Inlet beluga whales were proposed for listing at the time of preparation of the EA. The description of these laws and permits are incorporated here by reference.

1.7 SCOPE OF THE ANALYSIS

The 2008 EA considers MTRP activities which have the potential to impact marine mammals and their habitat; the affected environment; analyzes direct, indirect and cumulative impacts to marine mammals and their habitat, including Essential Fish Habitat (EFH) (with a particular focus on the importance of certain fish species as marine mammal prey), for the duration of the MTRP; and cumulative actions, including analysis of past, present and reasonably foreseeable activities that may occur simultaneous during the timeframe for completion of the MTRP, and related to the marine transportation activities that would be foreseeable following completion of the MTRP port expansion activities. The EA notes that the decision on the issuance of regulations would not occur until 2009 and any appropriate supplement to the analysis in the 2008 EA that may be warranted based on new information, in particular feedback from monitoring and reporting that would be required as part of the first-year IHA, would be incorporated into the rulemaking decision process. This scope of this Draft SEA is to update the affected environment with respect to the ESA listing of Cook Inlet beluga whales, update information on specified activities, including demolition of the existing dock, analyze new acoustic data on pile driving noise propagation in Knik Arm, analyze effectiveness and practicality of the 120 dB Level B harassment threshold from vibratory pile driving as established in the 2008 EA, and analyze results of the monitoring and reporting requirements under the IHA.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

NEPA requires consideration of an appropriate range of alternatives and an assessment of the environmental impacts of alternatives. In the 2008 EA and this SEA, NMFS analyzes a No Action alternative and the Proposed Action alternative. In other IHA analyses, an alternative requiring additional mitigation often is assessed, however, in this case, NMFS worked with the applicant and the other federal agencies early in the process, and additional mitigations for protection of marine mammals subsequently are included as part of the specified activities described in the application, such that NMFS' proposed action incorporates important mitigations without necessitating development of an additional alternative (see Alternative 3 discussion, below). Chapter 3 describes the changes to the Affected Environment that warranted update in this SEA, and Chapter 4 presents the updated analysis of Environmental Consequences of the alternatives.

The alternatives contained within the 2008 EA remain applicable to this SEA; 1) No Action Alternative and 2) Proposed Action: Issuance of Incidental Take Authorizations. The Proposed Action in the 2008 EA included issuance of both yearly IHAs and regulations which authorize the take of marine mammals under annual (or other frequency, as needed) LOAs. While NMFS is now proposing to issue 5-year regulations in lieu of yearly IHAs, the analysis in the 2008 EA and this SEA are intended to cover the entire duration of the MTRP to ensure consideration of the entire action in the NEPA analysis and to evaluate potential impacts to marine mammals and their habitat from the long-term MTRP. All details of the Alternatives in the 2008 EA are incorporated here by reference; however, Alternative 2 has been updated to include new specified activities proposed for authorization and other information as discussed above.

2.1 ALTERNATIVE 1- NO ACTION

The No Action Alternative would constitute a denial by NMFS' of the issuance of future incidental take authorizations, specifically not proceeding with the promulgation of a 5-year rulemaking and associated LOAs. This action would not constitute rescinding of the previously issued 2008 IHA, as that action is already underway and all appropriate findings under the MMPA and required analysis under NEPA were completed prior to issuance of that IHA. Under this action, the activities authorized in the 2008 IHA would continue until expiration of that IHA in July 2009.

2.2 ALTERNATIVE 2- PROPOSED ACTION

2.2.1. Overview of the Proposed Action

The Proposed Action remains the issuance of incidental take authorizations, as described in the 2008 EA. NMFS issued an IHA in 2008 and is now proposing to issue 5-year regulations

to take marine mammals by Level B harassment. The species most likely to be affected by the MTRP is the Cook Inlet beluga whale, given its consistent presence in Knik Arm. Under the proposed action, the applicant's take request is limited to the unintentional Level B harassment of small numbers of beluga whales, harbor seals, harbor porpoise, and killer whales, annually, for the next 5 years (i.e., until July 2014). Should in-water pile driving or dock demolition not be completed by then, NMFS would consider the issuance of additional incidental take authorizations for the subsequent years. The analysis in this SEA is intended to include all years the POA conducts in-water work to complete the MTRP.

2.2.2. Acoustic Harassment Thresholds for the Proposed Action

As part of NMFS proposed action, the 2008 EA identified the estimated pile driving harassment isopleth distances (i.e., the estimated distances at which marine mammals would receive the levels of sound identified by NMFS to be associated with different levels of MMPA take) based on data provided from a 2007 test pile noise survey. The 2008 EA indicated that these distances would be further verified with additional sound measurements upon commencement of construction, as only vibratory and impact driving of H-piles were measured and vibratory driving of one sheet pile was tested in 2007. Accordingly, the POA funded a study to investigate pile driving noise propagation through the waters of Knik Arm upon commencement of in-water pile driving. This study gathered data from all types of piles to be used in construction (e.g., open cell sheet piles, 36 in. steel piles) and from all methods of installation (e.g., stabbing, hairpin weight) and results can be found in the following report: *Port of Anchorage Marine Terminal Redevelopment Project 2008 Underwater Noise Survey During Construction Pile Driving* (Scientific Fishery System, Inc. 2009). Data on background sound levels from this survey augment those of past acoustic studies in Knik Arm (e.g., Blackwell 2005; URS 2007) which indicate that Knik Arm is a noisy environment, especially around the Port. The study also provided acoustic data specific to the type of piles and methods used in the MTRP. Based on this study and best available science (e.g., past acoustic surveys in Knik Arm), NMFS has analyzed whether the implementation of a 120dB Level B harassment threshold[1] for exposure to non-pulsed sounds (e.g., vibratory pile driving, chipping) is appropriate in Knik Arm and has, instead, identified a modified threshold for acoustic harassment by these specific sound types in this specific geographic area.

Currently, as presented in the 2008 EA, NMFS considers pinnipeds and cetaceans exposed to received SPLs of 190dB and 180dB, respectively, to be subject to potential injury (i.e., Level A harassment). However, the acoustic injury criteria are currently under review at NMFS and should a review of the best available science lead to the development of new criteria, appropriate additional analysis for this activity may be warranted. Specific to the MTRP, behavioral harassment (Level B) from pulsed sounds (e.g., impact pile driving) was identified in the 2008 EA to occur when marine mammals are exposed to SPLs at or above 160 dB, but below potential injurious thresholds.

[1] NMFS thresholds for exposure to certain non-explosive sounds are currently defined as sound pressure levels (SPLs) which are denoted as root mean square (rms) values. The rms level is the square root of the energy divided by a defined time period and is presented as dB re: 1 µPa. For purposes of this document, all sound levels are referenced to dB re: 1 µPa rms unless otherwise noted.

Regulations, if issued, would continue to use these thresholds to determine at what received levels takes occur. However, vibratory pile driving was considered as a separate type of noise source (i.e., non-pulse) in the 2008 EA and; therefore, a different harassment threshold was established. As outlined in the 2008 EA, the IHA established that marine mammals exposed to noise levels at or above 120dB during vibratory pile driving would be considered taken by Level B harassment. Based on a 2007 acoustic survey, the 120dB isopleth was established at 800m; however, empirical measurements were never taken at this distance or beyond during that survey. The accumulation of data continues to support the fact that background noise levels around the POA are continuously at or near 120dB due to winds and currents (e.g., Blackwell, 2005; URS, 2007; Scientific Fishery Systems, 2009). For example, during a test pile acoustic survey at Port MacKenzie, it was difficult to distinguish background sounds from vibratory pile driving at 1,300m (Blackwell, 2005). Similarly, during the 2008 acoustic study conducted during pile driving at the POA, it was difficult to distinguish vibratory pile driving noise from background noise as close as 1 km. Based on these data, NMFS is reanalyzing the use of the 120dB threshold level specific to this location as indicator of harassment from vibratory pile driving.

There are a number of factors which contribute to levels of reaction or if the animal reacts at all to a disturbance, as described in Chapter 4 of the 2008 EA. In summary, type and significance of marine mammal behavioral and physiological reactions are likely to be dependent upon, among other parameters, the age, sex, or gender of the individual, the behavioral state (e.g., feeding, traveling, etc.) of the animal at the time it receives the stimulus, the distance from the sound source, whether the source is moving and, if moving, is it toward or away from the animal, and the level of the sound relative to ambient conditions (Southall et al., 2007). The 2008 IHA established a 120dB Level B harassment threshold for vibratory pile driving. However, as stated above, acoustical data continue to show that the waters around the POA are continuously at or near this level. Therefore, NMFS has determined that exposure to vibratory pile driving SPLs at or above 125dB, but below injurious thresholds, is a more appropriate threshold for considering a marine mammal taken by Level B harassment around the POA.

Table 2 below outlines the proposed harassment isopleth distances proposed for both impact and vibratory pile driving. These distances are derived from both the 2007 and 2008 acoustic studies conducted at the Port. The larger distance from each study for each threshold level is proposed to be conservative. Table 3 outlines the worst-case measurements and calculate source levels from the 2008 study. From this study, it is likely the use of the hairpin weight during stabbing will not result in harassment as the 160dB isopleth is within 14.2m (Scientific Fishery Systems, 2009) and stabbing would not begin if a marine mammal is sighted within the action area. The chance of a marine mammal approaching within this area is minimal. Marine mammals will be considered taken by Level B harassment when animals enter within 350 m of the pile hammer during impact pile driving or within 1,300 m of the vibratory hammer. As proposed by the applicants, any in-water chipping during dock demolition will abide by mitigation and reporting requirements as established for vibratory pile driving as chipping is also considered a non-pulse noise. The 200 m shut down zone to avoid injury and minimize harassment established in the 2008 IHA, although very conservative (the 190/180dB levels are actually within 10m), will continue to be proposed as part of the action for issuing incidental take

regulations. The additional mitigation requirements, including shut down requirements when calves or large groups are sighted, will also be included in the regulations.

Table 2: Estimated harassment isopleth distances for pile driving at the Port of Anchorage.

Type	Level A (190/180 dB) isopleth Distance (meters)	Level B (160dB) isopleth Distance (meters)	Level B (125dB) isopleth Distance (meters)
Impact hammer (pulse)	< 10m	350m	N/A
Vibratory hammer (non-pulse)	<10m	N/A	1,300 m
Hairpin weight (pulse)	1.4 m	14.2 m	N/A

Table 3. Summary of Worst-Case Measurements from the 2008 acoustic study. Due to the variation in vibratory pile driving measurements and that at distances as close as 1km, it was difficult to distinguish this source from background noise, the average calculated source level of 187 dB was used to calculate distance to the 125dB isopleth. Therefore, no worst-case measured level is provided.

Summary of Acoustic Measurements and Estimated Source Levels and Isopleth Distances							
Description	**Worst-Case Measured Level (dB rms)**	**Frequency Range (Hz)**	**Calculated Source Level**	**Calculated Distance to 190 dB rms (m)**	**Calculated Distance to 180 dB rms (m)**	**Calculated Distance to 160 dB rms (m)**	**Calculated Distance to 125 dB rms (m)**
Sheet pile- face wall, average vibratory	N/A	100-4000	187 dB	N/A	<10m	N/A	1,300
Sheet pile- face wall, impact (deep hydrophone)	148 dB at 355m	8000-10,000	200 dB	3.1	9.7	97	N/A
Sheet pile- face wall, impact (shallow hydrophone)	157dB at 78m	10-200; 6,000	195 dB	1.8	5.7	57	N/A
Sheet pile- tail wall, vibratory	120dB at 107m	200-400	161 dB	N/A	N/A	N/A	60
Sheet pile- tail wall, impact	139 dB at 268m	2,000-7,000	188 dB	N/A	2.4	23.8	N/A
Wye pile, vibratory	139dB at 149m	2,500-4,000	182 dB	N/A	1.3	N/A	747
Wye pile, impact	148dB at 155m	8,000-10,000	195 dB	1.7	5.4	54.1	N/A
Temporary pipe pile, vibratory	144dB at 35m	200-4,500	175 dB	N/A	N/A	N/A	312
Hairpin weight	143dB at 106m	Not available	183 dB	N/A	1.4	14.2	N/A

2.3 ALTERNATIVE 3- ALTERNATIVES CONSIDERED BUT ELIMINATED

During the scoping process for the USACE Section 404/10 Permit, NMFS suggested numerous mitigation measures and alternative construction operations to minimize impact to marine mammals, particularly to Cook Inlet beluga whales. Many of the mitigation measures such as not impact pile driving during low tide, soft starts, acoustic studies, use of marine mammal observers to monitor beluga whales behavior around the POA, and beluga whale sighting notification programs, were incorporated into the USACE permit and; therefore, are part of Alternative 2- the proposed action. However, other considerations were made with respect to construction timing and use of acoustic attenuation devices to minimize impacts to marine mammals.

Initially, NMFS suggested pile driving during winter months as beluga whales tend to travel to middle and lower portions of the Inlet during this season. However, due to stationary and drifting sea ice, this possibility was quickly eliminated as pile driving during this time is dangerous to crew, could impede navigation if the sheet pile is struck and loosened by ice before is it secured, and ice could cause damage to the material during installation. Presence of sea ice would impede use of barges and associated vessels necessary for construction. Finally, limited lighting during winter would reduce pile driving hours adding to cost and lengthening the duration of the MTRP. Therefore, NMFS determined that pile driving during winter was not practical and eliminated this option from the construction plan.

Many construction activities which involve in-water pile driving utilize sound attenuation devices to minimize noise propagation into the marine environment. Use of these devices protects fish, invertebrates, and marine mammals. A common, albeit costly and fairly new, noise minimization device is a bubble curtain. There are many different bubble curtain designs but essentially it consists of a circular or square shaped air distribution manifold made of rubber, plastic, or steel tubing which surrounds the piling at various points below the water surface. Bubbles can be confined or unconfined. The curtain is placed completely around piles which dissolves waves while the pile is hammered into the ground. There are two main factors which eliminate use of a bubble curtain from use during the MTRP: (1) the incredibly strong tides and currents of Knik Arm would likely render the bubbles curtain ineffective, and (2) sheet piles are linear, not circular, and there are no current designs of bubble curtains that would fit around a sheet pile. Other noise attenuation devices, such as cofferdams and sleeves, are also not practical for these two reasons. However, as the MTRP progresses, the POA/MARAD have indicated they will continue to work with contractors should advancement in technology provide some device appropriate for the type of piles used in the MTRP and are able to withstand the harsh environmental conditions of Knik Arm.

CHAPTER 3 AFFECTED ENVIRONMENT

The purpose of this chapter is to provide baseline information for consideration of the alternatives, and describes the environment that might be affected by the proposed action and alternative.

For issuance of a MMPA authorization, NMFS must evaluate the proposed action in terms of the current MTRP design plan, as described in the application and demolition plan, related to marine mammals and their habitat. The 2008 EA stated that an SEA would be prepared, if appropriate, before issuance of regulations. Among other triggers for this SEA (e.g., new specified activity), there have been two changes to the affected environment since preparation of the original EA which warrant a re-analysis of the proposed action: the listing of Cook Inlet beluga whales as endangered under the ESA and changes to valuable habitat classification. All other descriptions of the affected environment, including marine mammal biology and ecology, and physical and biological habitat information in the 2008 EA are incorporated here by reference.

The Cook Inlet beluga whale population, previously listed as depleted under the MMPA, was proposed for endangered status listing under the ESA on April 20, 2007 (72 FR 19854). On October 20, 2008, NMFS issued a final rule listing this population as endangered under the ESA (73 FR 69219). This listing status became effective on December 22, 2008. Since the listing became effective, the POA/MARAD has not conducted any in-water pile driving operations due to the presence of winter ice in Knik Arm, making pile driving dangerous. The POA/MARAD have indicated that the in-water pile-driving season generally concludes in late fall/early winter (October/November) and is scheduled to resume in April, annually. Because NMFS' action of issuing an incidental take authorization (which authorizes take of marine mammals under the MMPA only) is considered a major federal action, it must comply with the ESA. As such, NMFS Permits Division requested Section 7 consultation with NMFS AKR on March 24, 2009. This consultation is pending and must be completed before NMFS issues regulations.

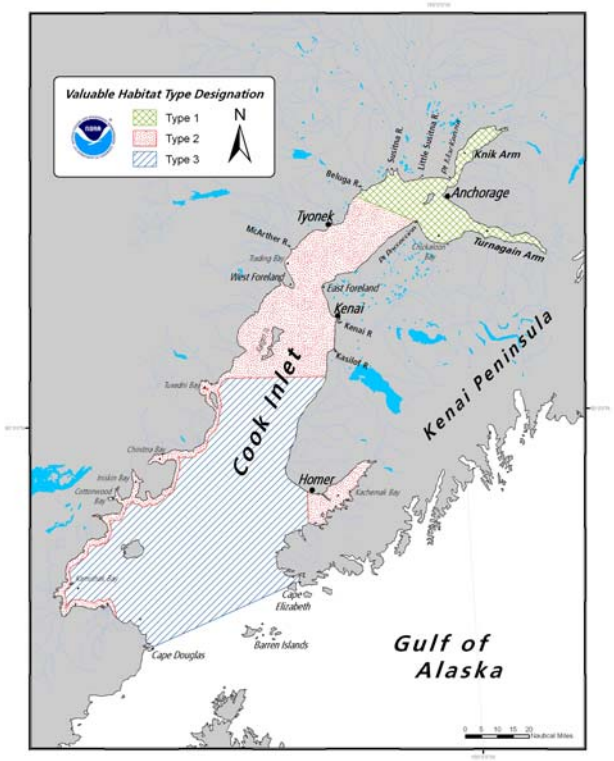
In addition to listing this population of beluga whales as endangered since the EA was completed, NMFS also prepared and distributed a beluga whale Conservation Plan. The Conservation Plan provides the most current information on beluga whale parameters such as life history, distribution, prey and foraging, and habitat. Based on this document, the overall basic biology, ecology, distribution patterns, and subsistence use, as described in the 2008 EA, is unchanged. No new literature is available nor has research been conducted in the area which adds to knowledge of the species. Therefore, the information on beluga whales in the original EA is incorporated here by reference, including the current population estimate of 375 individuals. Habitat classifications; however, described in the 2008 EA were based off of the 2005 Draft Conservation Plan. The 2008 Conservation Plan modifies these habitat designations. All other information on habitat use and habitat modeling in the 2008 EA remain unchanged.

In the Draft Conservation Plan, four habitat classifications, Type I-IV, were designated in Cook Inlet with respect to importance to beluga whales. Based on the Conservation Plan, Cook

Inlet has been stratified into three, not four, habitat regions based on differences in beluga use (Figure 1), with Type 1 habitat being the most valuable due to its intensive use by belugas from spring through fall for foraging and nursery habitat, and because it is in the upper Inlet where the greatest potential from anthropogenic impacts exists. The area around the POA falls into Type 1 habitat. Type 2 habitat includes areas with high fall and winter use, and a few isolated spring feeding areas. Type 3 habit encompasses the remaining portions of the range of belugas within Cook Inlet. While Type 1 habitat is clearly the most valuable of the three types based on the frequency of use, the relative values of Types 2 and 3 habitats are difficult to distinguish because of limited information about belugas' wintering habitats. These habitat classifications may change as the population recovers and expands into other areas, as the habitat itself changes over time, or as our knowledge about beluga habitat requirements improves.

The Conservation Plan also identifies areas of repeated beluga whale use in the upper Inlet for summer and fall feeding, termed "hotspots". The primary hotspots for beluga feeding areas are: the Big and Little Susitna Rivers, Eagle Bay to Eklutna River, Ivan Slough, Theodore River, Lewis River, and Chickaloon River and Bay. Many of these areas are also popular fishing locations for humans. Beluga whales exhibit high site fidelity and may persist in an area with fluctuating fish runs or may tolerate certain levels of disturbance from boats or other anthropogenic activities in order to feed. The waters around the POA affected by the MTRP (either by emission of underwater sound or habitat loss) are not considered a "hotspot." The closest hotspot to the POA is Eagle Bay to Eklutna River, 15 to 17 miles north of Anchorage.

Figure 1. Valuable habitat areas (Types 1, 2, 3) identified for Cook Inlet beluga whales.



CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter outlines the effects or impacts to Cook Inlet beluga whales in Knik Arm from the proposed action, as modified by information contained in the LOA application, monitoring reports, and the 2008 acoustic study. The assessment of effects to killer whales remains in keeping with the analysis in the 2008 EA, however, an update to the number of harassment incidents that are considered for proposed MMPA authorization is provided for completeness. Impacts to all other affected marine mammals species, if exposed to harassment level noise, remain the same as in the 2008 EA and are therefore incorporated here by reference. Impacts to habitat are also incorporated here by reference as the POA has not changed the design plan of the MTRP and therefore all analysis on habitat and the biological environment in terms of marine mammal prey species remains the same, except that the analysis of effects is presented in terms of the Type I habitat described in Chapter 3, above. The terms "effects" and "impacts" are used interchangeably in preparing these analyses. The CEQ regulations for implementing the procedural provisions of NEPA, also state, "Effects and impacts as used in these regulations are synonymous." (40 CFR §1508.8). The terms "positive" and "beneficial", or "negative" and "adverse" are likewise used interchangeably in this analysis to indicate direction of intensity in significance determination.

4.1 EFFECTS OF ALTERNATIVE 1

The effects of not issuing MMPA incidental take authorization for activities beyond July 2009 would include those effects considered in the 2008 EA related to the importance of the Port for transportation, national security and as part of the vital infrastructure in the region. In summary, should future incidental take authorizations be denied, the POA would not be authorized to continue to harass marine mammals past expiration of the current IHA under the MMPA. This does not mean that the POA could not continue to carry out the MTRP (this action is authorized by their USACE permit), but does mean that POA/MARAD would not be authorized to harass marine mammals in the process and would need to explore alternative means to conduct the activity such that the MMPA incidental harassment authorization would not be needed. As addressed in the 2008 EA, the complete action for construction and operation of the MTRP was evaluated in that EA. Denial of the MMPA authorization for 2009 and beyond would result in partial implementation of the action analyzed in the 2008 EA.

4.2 EFFECTS OF ALTERNATIVE 2

As described in the 2008 EA, under Alternative 2, the POA/MARAD would be authorized to take, by Level B harassment only, marine mammals incidental to pile driving with certain mitigation requirements set in place. The 2008 EA analyzed impacts from pile driving due to the fact that, at the time, it was the only activity expected to result in take of marine mammals. However, now, the additional activity of in-water demolition, if it is the chosen option, could also potentially result in harassment to marine mammals.

NMFS included monitoring and reporting requirements in the POA's current IHA to ensure that determinations and effects analysis developed for issuance of MMPA authorizations were adequate. Under the IHA, and also as a conditioned in the POA's USACE permit, two marine mammal monitoring teams are required. The first is comprised of one to two NMFS approved marine mammal observers (MMOs) stationed on-site at the POA in the vicinity of pile driving to implement mitigation measures and collect the following information: (1) date, time of initial sighting to end of sighting, tidal stage, and weather condition (including Beaufort Sea State); (2) species, number, group composition (i.e., age class), distance to pile driving hammer, and behavior (e.g., group cohesiveness, direction of travel, etc.) of animals throughout duration of sighting; (3) any discrete behavioral reactions as well as how close marine mammal(s) approach pile driving hammer; (4) the location of marine mammals sighted with respect to the pile driver and the number of animals taken if any entered the harassment isopleth during pile driving; and (5) type of pile driving activities occurring at the time of sighting and if and why shut down was or was not implemented. Monthly reports were originally due to the 5th of each month, as described in the EA, but later modified to the 10th of each month to allow for time for the POA to gather all sighting sheets from the previous month, summarize the reports, and prepare and finalize the report.

In addition to the NMFS-approved MMOs on-site responsible for monitoring the harassment zones and implementing shut-down procedures for in-water construction activities, an independent beluga whale monitoring team from Alaska Pacific University's (APU) Environmental Science and Marine Mammal Department is stationed on a bluff at Cairn Point located on Elmendorf Air Force Base. This location serves as an ideal vantage point for monitoring. The APU team reports on: (1) the frequency at which beluga whales are present in the MTRP footprint; (2) habitat use, behavior, direction of travel and group composition; and (3) observed reactions or changes in behavior of marine mammals in response to in-water activities occurring at the time of sighting. The APU observers monitor for beluga whales 8 hours per day/ 4 days per week and cover two tide cycles per observation day. APU observers work in collaboration with the POA and the on-site MMOs to immediately communicate the presence of beluga whales or other marine mammals in the area. This monitoring team is informed of anticipated construction schedules and any changes during observation shifts. Both teams communicate to confirm sightings and distances of the marine mammals to the in-water construction activities.

The POA is required to employ two marine mammal monitoring teams and submit monthly reports which allow NMFS to examine marine mammal impacts on both a short and long term scale. Mitigation measures include calf and large group shut downs, which are intended to further reduce impacts to potentially more sensitive or at risk individuals in addition to ensuring a negligible impact on the affected marine mammal species. The habitat mitigation requirements required under the POA's USACE permit further protect marine mammals as top level predators. The following information supplements the original effects analysis in the 2008 EA. Summary from the monitoring reports collected by these two terms are referenced throughout this section as these reports represent the first of its kind with respect to impacts to beluga whales from pile driving.

4.2.1 Socio-Economic Environment

The impacts to the socio-economic environment, as described in the 2008 EA, remain unchanged and that analysis is incorporated here by reference. In summary, the proposed action is not expected to result in a significant adverse impact to the surrounding local communities or subsistence needs. In fact, the expansion of the POA is expected to stimulate the economy of the State of Alaska by: 1) decreasing vessel waiting time for berths which would reduce transportation costs, 2) increasing commerce due to ability to handle more cargo; and 3) increasing revenue for Anchorage from cruise passengers.

4.2.2 Physical Environment

The information contained in this section of the 2008 EA, including that on direct habitat loss, hydrological modeling, essential fish habitat (EFH), and the habitat around the POA remain in effect and are incorporated here by reference. In summary, the primary impact to the physical environment would be direct loss of habitat with potential for some oceanographic changes. Hydrological models demonstrated that POA expansion is not expected to have any effect on the water level at the POA or the propagation of the tide wave through upper Cook Inlet. At Cairn Point, current speed during flood flow would be increased slightly during neap tide conditions with the expansion in place. During spring tide conditions, changes are even less pronounced. At Port MacKenzie, change in current speed and direction are unaffected by the proposed expansion. The most overt change from port expansion is expected to be the suppression of formation of gyres in front of the POA and Cairn Point and that when formed, they would occur much later in the ebb tide cycle. In general, continued shoreline development in Knik Arm will have impacts on EFH. EFH will be permanently lost within the MTRP footprint; however, the POA is required, under their USACE permit, to carry out projects that would restore fish habitat in other parts of Knik Arm, including stream restoration, and use clean fill, free of unsuitable material and free of toxic pollutants. Modeling or quantifying a decrease in fish abundance, if any, in Knik Arm as a result of the MTRP is extremely difficult; however, in theory, if prey availability is substantially decreased, it could result in decreased foraging opportunities for marine mammals, specifically beluga whales, and result in increased energy expenditure to find prey. However, beluga whales primarily use the habitat around the POA as a migratory route with limited feeding observed. Moreover, belugas have been known to utilize man-made structures (e.g., pilings) to facilitate prey capture. For example, at the POA, beluga whales have been observed positioning one whale along a rip rap dock, while a second whale herds salmon along the structure toward the stationary beluga whale.

While the habitat around the POA is now considered Type I habitat, habitat use by beluga whales remain unchanged from that analyzed in the 2008 EA. In addition, the area around the POA is not considered a “hotspot” feeding area. In fact, as described in the EA, the waters around the POA are primarily used for travel. Monitoring reports collected by both marine mammal observers (MMOs) stationed to implement mitigation measures and those by the independent scientific monitoring team on Cairn Point, indicate this trend of using the area around the POA primarily for travel has continued in the presence of pile driving operations. In

addition, foraging or suspected foraging events have been recorded in monitoring reports and NMFS scientists have observed beluga whales feeding around the newly filled North Backlands area of the POA (B.Smith, pers comm., February 9, 2009).

The only new action described by the POA in the LOA application is demolition of the existing dock. However, the creation of a dike seaward of the existing dock is not new and it does not extend past the original MTRP footprint (i.e., it would have been subject to construction activities and included in the area permanently impacted by the MTRP in either case). Therefore, the building of the dike and demolition of the existing dock is not expected to result in additional impacts to habitat in terms of habitat loss. Noise from chipping in-water (Option 1) may result in harassment to marine mammals; however, impacts to marine mammals associated with such noise have already been analyzed in the 2008 EA and are not new. All in-water chipping activities would be subjected to the same mitigation measures as vibratory pile driving.

4.2.3 Biological Environment

The biological resources that will be impacted from the MTRP most relevant to NMFS' proposed action, including fish and marine mammals, are addressed in detail in the corresponding section of the 2008 EA. In summary, NMFS does not anticipate that harassment to marine mammals, specifically beluga whales, will result in more than a negligible impact to the affected species or stocks and, while the MTRP will result in the permanent loss of intertidal and subtidal habitat and temporary habitat degradation in the form of introducing sound in the underwater environment, it will not have an unmitigable adverse impact to marine mammal habitat in terms of altering habitat use, accessibility to important feeding areas, or reduce availability of prey.

4.2.3.1. Fish

Again, the 2008 EA thoroughly examines the impacts to the biological environment from the MTRP in term of marine mammal resources and this information is incorporated here by reference. In summary, the expansion of the POA will likely adversely impact fish in Cook Inlet (e.g., from pile driving noise, direct kill from fill placement, permanent loss of habitat) but it is not expected to be to the extent where prey availability to marine mammals would be significantly affected. Over 90% of Knik Arm remains undeveloped (NMFS 2008b) and other habitats around the POA and portions of Knik Arm could be considered as having the same attributes which makes the area around the POA an ideal nursery ground (Houghton et al. 2005a, b). In addition, the POA's USACE permit requires numerous mitigation and conservation projects to monitor and reduce impact to fish and compensate for habitat loss. For example, the POA is required to conducted research analyzing the impacts to salmonids from pile driving; not authorized to pile drive within a one week period following smolt releases from the Ship Creek Hatchery; and must, wherever possible, incorporate end-of-phase construction joints that provide potential refuge habitat for salmonids. A complete list of the USACE permit requirements can be found in Appendix B of the POA's LOA application. To date, over 67 of the planned 135 acres of intertidal and subtidal habitat have been filled. Monitoring reports

indicate the behavior indicative of feeding is still occurring around the POA and therefore, fish are still available despite this fill. In addition, NMFS scientists have observed beluga whale foraging around the newly filled northern area of the POA. Demolition of the dock is specifically analyzed in this Draft SEA and NMFS does not anticipate any further impacts to fish associated with that component of the action. Should the POA choose to demolish the dock in water, this will include introduction of another sound source (e.g., chipping hammer) but noise impacts to fish were previously addressed in the EA and the inclusion of some in-water noise from chipping hammers is not anticipated to change the previously analyzed impacts. Due to the mitigation measures set in place by the USACE permit, NMFS continues to anticipate that availability of beluga whale prey would not be significantly negatively impacted from the MTRP. Since completion of the EA, a trial fish study plan was developed (http://www.portofanchorage.org/library_f.html) and the trial conducted between August 4 and 7, 2008. The objectives of the trial study were to conduct preliminary logistics and equipment testing in the challenging environment of Knik Arm. Trial activities included: (1) construction of a functional wet lab at the POA facility; (2) construction and testing of live fish cages with attached acoustic monitoring equipment; and (3) collection of juvenile salmonids within Knik Arm for testing of live cages and wet lab. Live cages were successfully deployed with internal and external hydrophones and recorded noise levels produced by pile driving and other activities. Cages were fitted with an external metal frame to provide rigidity and to prevent collapse when subjected to high currents. The study was successfully completed and several important issues necessary for conducting actual in-situ exposure experiments in Knik Arm were resolved. This preliminary work was done during 2008 construction to prepare for actual testing with live fish in 2009.

4.2.3.2. Marine Mammals

The 2008 EA uses the best scientific literature available and expertise of NMFS biologists to analyze effects from issuance of a one-year IHA and anticipated long-term effects from authorizing marine mammal harassment for the duration of the MTRP. The 2008 EA indicated that a SEA would be prepared, if appropriate, incorporating the findings of the monthly sighting reports required under the IHA and any new scientific data for consideration of the rulemaking and future LOAs.

Overall, the information contained in the 2008 EA represents NMFS' impact analysis on marine mammals associated with the specified activities and remains applicable to the analysis in this SEA. The 2008 analysis, with accompanying rationale and updates as provided here, is incorporated here by reference. In summary, the 2008 EA discusses impacts from introducing noise into the marine environment. Exposure to such noise could result in behavioral and physiological changes including hearing impairment; altered headings, fast swimming, changes in dive, surfacing, respiration, feeding, and vocalization (to compensate for masking) patterns; and hormonal stress responses. The analysis in the EA concludes that marine mammal behavioral and physiological responses to pile driving noise, if any, would be short term and would not result in a significant impact to marine mammals.

Demolition of the existing dock was not included in the original IHA application as demolition would not occur until 2010 at the earliest (and the IHA is valid for 2008-2009) but it was included in the LOA application and detailed in the Demolition Plan. As described in Chapter 1, Option 1 is the only method which would necessitate demolition without decoupling the dock from the water. Although considered "in-water," the chipping hammer would not break up the concrete dock underwater; therefore, most sound would be in-air. However, some reverberation could transcend down through the pipe piles supporting the concrete and dissipate into the water column or noise in air could simply enter through the water's surface. The POA/MARAD provided information that the chipping hammer used for this activity operates at 19% reduced energy than a vibratory pile driving hammer. Although no empirical data exists for chipping hammer sound attenuation when operated above-water in Knik Arm, NMFS considered the horsepower energy from the chipping hammer compared to the vibratory hammer and the fact the chipping hammer would not actually be used underwater when analyzing potential impacts to marine mammals. NMFS has determined that sound from this activity is considered similar to vibratory hammer (i.e., non-pulse) and, as such, harassment isopleths should be set at the 125 dB threshold. However, because no sound data is available, NMFS has cautiously proposed the same shut down zone as pile driving (i.e., 200 m) and harassment isopleth as vibratory pile driving (i.e., 1,300 m) despite the chipping hammer operating at a lower energy level and not operated in-water.

At the time the EA was completed, there was no information available on beluga whale responses to exposure to pile driving noise nor was there any scientific literature documenting injury from pile driving for any cetacean species. While there is still no documented injury from pile driving (and therefore, among other reasons, NMFS continues to conclude that no Level A harassment will occur), monitoring required under the IHA provide NMFS with the first reports of beluga whale responses to pile driving. As described in the EA, marine mammal scientific monitoring around the POA has been conducted since 2005 (three years before in-water pile driving commenced) on marine mammal presence, group size and composition, habitat use, etc. (Ramos et al., 2006; Markowitz and McGuire, 2007; Cornick and Kendall, 2008; Cornick and Saxon-Kendall, 2008) and will continue through to 1-year post construction. Another marine mammal study around the POA and other portions of Upper Cook Inlet was also conducted in 2004 for the Knik Arm Crossing Project, providing similar information (Funk et al., 2005). Therefore, NMFS has small scale, site specific pre-construction sighting data available with which to compare the monitoring reports collected under incidental take authorizations. Data from the monitoring reports collected during the 2008 in-water pile driving season, in both the short term and when compared to pre in-water pile driving marine mammal behavioral data, further support NMFS' negligible impact analysis.

Port of Anchorage Marine Mammal Observer Data

As required under the IHA, the POA/MARAD have submitted monthly marine mammal monitoring reports to NMFS in a timely manner for each month of in-water pile driving at the POA (July-November) and an end-of-year construction report was submitted summarizing all data collected during these months. This final report is available on the NMFS Permits website.

Based on July's report format, the sighting sheet was modified and a more robust collection and reporting method was set in place to ensure that all data relevant to assessing impacts to marine mammals is provided. The following information summarizes information contained in reports collected by trained, NMFS approved observers stationed at the POA thirty minutes prior to and during all pile driving activities (Table 3). From July to November 2008, MMOs were on site every day in-water pile driving took place (6-7 days per week). From August to November, pile driving took place for a total of 606.55 hours (number of pile driving hours was not recorded in July). A total of 59 beluga whale sightings, comprising 421 whales (231 adults, 101 juveniles, 43 calves, and 56 age unknown) and 1 sighting of a single harbor seals were recorded for all months but pile driving was not always occurring when whales were sighted (Table 4). Of all sightings, 73% were sighted at some point within designation harassment zones but again, pile driving was not always occurring during these sightings. These data indicate that whales are utilizing waters close to the POA despite the ongoing construction.

In August, three groups of beluga whales demonstrated an observable change in behavior. On all 3 occasions, the group split in two due to presence of a barge or a boat. No in-water pile driving was occurring at the time of those sightings; therefore, the change in behavior is not attributed to pile driving. For all sightings made during in-water pile driving operations (n=5), no reactions or change in behavior were observed. Of these 5 sightings, only on two occasions did beluga whales (8 individuals total) enter into the Level B harassment zone during pile driving operations and were therefore considered taken. This information further supports NMFS' statement that calculated take numbers in the LOA application are most likely an overestimate.

Table 3. Cumulative Data of Pile Driving Operations and Beluga Whale Sightings at the Port of Anchorage (July-November 2008).

Cumulative Data From Monthly POA MMO Reports												
Month	**No. of Takes**	**Impact Pile Hours**	**Vibratory Hours**	**Stabbing**	**Total Days Pile Driving (Impact/Vibratory/Stabbing)**	**No. shutdowns (mandatory/ non-mandatory)**	**No. Days Whales sighted**	**No. Sightings**	**No. sightings w/in Zones[2]**	**No. Whales Sighted**	**No. Whales w/in Zones[2]**	**Ag Cla**
July[1]	0	Unkn		unkn	unkn	0/0	1	1	unkn	7	unkn	unk
August	0	147.75		unkn	25	1/5	13	34	17 (50%)	262	107 (41%)	A
September		32.75	70.5	22.5	25 (9/12)	0/0	8	12	5 (42%)	50	25 (50%)	A
October	3	104	55	50	30 (21/15)	4/0	3	3	2 (66%)	10	9 (90%)	A
November	5	83.55	12	28.5	25 (18/5/7)	6/0	4	10	10 (100%)	102	109 (100%)	A
TOTAL	**8**	**606.55 (Aug-Nov)**			**105**	**11/5**	**29**	**60**	**44 (73%)**	**431**	**250 (58%)**	

[1]Recording of number of pile driving hours did not begin until August.

[2]These columns represent number of sightings or whales within the designated harassment zones but does not necessarily mean that pile driving was occurring at the time whales entered the zones.

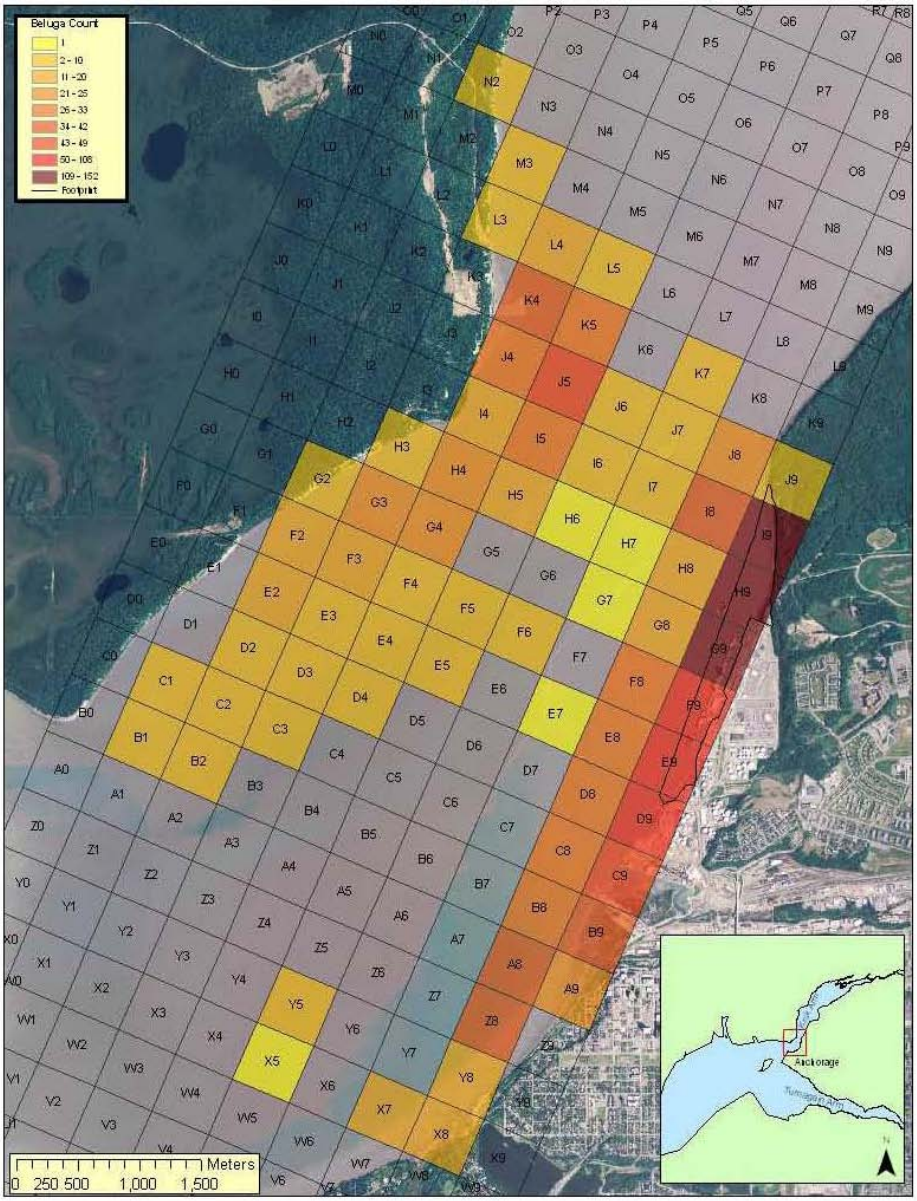
Table 4. Sighting Data Collected During In-Water Pile Driving (July-November 2008).

Sightings During Pile In-Water Pile Driving				
Date	**No. of whales**	**Type of In-water Pile Driving**	**Shut down**	**Entered harassment zone (350m-impact, 800m- vibratory)**
14-Aug	16	vibratory	yes	yes but pile driving shut down before entering
20-Aug	3	stabbing	no	no
13-Sep	5	vibratory	no	no
1-Oct	3	vibratory	yes	yes- 3 takes
7-Nov	5	vibratory	yes	yes- 5 takes

Cairn Point Marine Mammal Observer Data

The scientific marine mammal team located at Cairn Point has and continues to monitor for beluga whales to characterize presence and habitat use around the POA. To date, these reports also indicate no observable behavioral changes in response to pile driving or other in-water construction (Cornick and Saxon-Kendall 2009). Data from the 2008 monitoring reports gathered by this scientific monitoring team was compared to total whales sighted per hour from 2004-2006 for August and September and 2004-2007 for October and November. For all years and months, except October, the average number of whales sighted per hour was higher when the 2008 data was added. While the October average in 2008 was higher than 2005 and 2006, it was not higher than 2004 and 2007, and overall decreased sighting rate by 0.09 whales/hour. The reports also indicate that travel continues to be the predominant behavior, followed by suspected feeding, and milling. Temporal and spatial distribution of beluga whales was consistent with previous studies. This team used theodolite tracking to document fine scale use of the habitat around the POA (500 x 500m grids). Consistent with previous years, as described in the 2008 EA, beluga whales continued to utilize waters on the POA side of the Arm more so than the central or western waters (Figure 2). Thirty four percent (n=25) of all sightings were tracked within the MTRP Footprint. The greatest concentration of individual whales (65% or 184 out of 283 whales) was sighted within or adjacent to the MTRP footprint. NMFS also considered the amount of time beluga whales spent within or adjacent to the MTRP footprint pre and post pile driving seasons. In 2006, from April to October, beluga whales spent 7.6 hours (460 minutes) within the footprint (Markowitz and McGuire, 2007). During the 2008 pile driving season (July-November), beluga whales spent approximately 12.27 hours (736 minutes) within or adjacent to the MTRP footprint. These data indicate that beluga whales are not abandoning or utilizing the habitat around the POA in a decreased capacity.

Figure 2. Spatial distribution of beluga whales. The black outline represents the Port of Anchorage Marine Terminal Redevelopment Project Footprint. Cells are color coded by the total number of whales observed during the entire study period: June 24- Nov.14. (Taken from Cornick and Saxon-Kendall, 2009)



These long term observations of consistent use of waters immediately adjacent to and with the MTRP footprint and continuation of the same trend in behavior suggest that construction activities occurring for the MTRP are not influencing beluga whale abundance or habitat use around the POA. As stated previously, scientific studies investigating reactions of beluga whales directly to pile driving are lacking; therefore, NMFS used the information available in published scientific literature and available reports to assess potential impacts to beluga whales, when exposed to such activity, during its impacts analysis for issuance of the IHA in 2008. In general, scientific literature suggests the following reactions are the most

common with exposure to anthropogenic noise: altered headings, fast swimming, changes in dive, surfacing, respiration, and feeding patterns, and changes in vocalizations. NMFS acknowledges these reactions are possible; however, also notes that, to date, all monitoring reports show no apparent observable reaction of Cook Inlet beluga whales to pile driving. There could be a number of reasons for this, including, but not limited to: (1) Cook Inlet beluga whales have demonstrated a tolerance to commercial vessel traffic and industrialization around the POA and therefore, may simply be habituated to such noise; (2) Cook Inlet is a naturally noisy environment which raises ambient sound levels; (3) pile driving is intermittent in nature and a stationary source which may result in a comparatively less severe response than that expected from a moving or continuous source; (4) the mitigation measures set by NMFS and implemented by the POA are appropriate and effective to minimize harassment; (5) beluga responses to pile driving are not detectable by existing data collection methods. Opportunistic sightings reports and those from MMOs under the current IHA describe accounts of beluga whales vocalizing around tugs/barges, swimming near and around ships, and feeding around working vessels/newly filled land. While animals would be exposed to greater than background noise levels from pile driving, background sound levels in Knik Arm are already higher than most other marine and estuarine systems due to strong currents and eddies, wind, recreational vessel traffic, and commercial shipping traffic entering and leaving the POA (Blackwell and Greene 2002; Blackwell 2005; Scientific Fishery Systems 2008). To date, all monitoring reports indicate no change in frequency, habitat use, or behavior of whales exposed to pile driving activities. NMFS anticipates that belugas would not alter their behavior in a way that prevents them from entering and/or transiting throughout Knik Arm. Belugas are currently known to associate with vessels emitting loud low frequency sounds around the POA.

There are two additional impacts that could be occurring in whale behavior or physiology but are not observable. These include stress hormone production response and alteration of vocal patterns by beluga whales when exposed to pile driving noise. The POA is preparing a beluga whale acoustic study, as required by the USACE permit, to investigate vocal behavior of beluga whales and the potential use of passive acoustics to detect beluga whale presence and compare these data, if successfully gathered, to visual observations. NMFS acknowledges that environmental variable in Knik Arm make for a poor acoustic environment and present challenges for acoustic recordings. Recently, a pilot acoustic feasibility study was conducted, independent of the MTRP, by scientists in Upper Cook Inlet in July and August 2008. Preliminary results indicate that the strong tides make for a challenging environment for which to collect acoustic data; however, it is possible with dedicated effort (B. Stewart 2009, pers. comm.17 Feb). The POA/MARAD have been coordinating efforts with NMFS and contractors to conduct an acoustic survey investigating (1) visual versus acoustical detection rates of beluga whales around the POA; and (2) beluga whale vocalization characteristics (e.g., duration, frequency) in absence of and during pile driving. This study is scheduled to be conducted around August/September 2009. Because of the high abundance of beluga whales during the months of August-October around the POA, NMFS agrees that this is the best time to conduct this study. During the process of issuing future LOAs, NMFS will use the data collected from this study to further investigate any changes in vocalization patterns around the POA from the MTRP. The data obtained from this study will further contribute to scientific information on

impacts, if any, from coastal development on Cook Inlet beluga whales. The acoustical and observational research that has been and continues to be conducted and funded by the POA/MARAD during the MTRP will contribute to beluga whale conservation and recovery by narrowing the range of possible impacts to beluga whales from coastal construction. NMFS will continue to review results of all monitoring (both observational and acoustical) upon issuance of yearly LOAs to continue to ensure that any impacts from the MTRP are having no more than a negligible impact on Cook Inlet beluga whales.

4.2.3.3. Expected Take

This section is prepared in reference to section 4.2.3.2.6 in the 2008 EA and describes the take estimates from the LOA application, how they were derived, assumptions accompanying those calculations, and the number of animals NMFS proposes to authorize. The EA indicated that supplemental beluga take numbers for the rulemaking would be calculated upon gathering further information from the POA as pile driving hours will change as well as the percentage of impact and vibratory driving. The number of marine mammals taken from pile driving, based on maximum number of pile driving hours expected, was derived in the same manner as for the IHA. The Low Tide Correction Factor refers to the mitigation condition that no impact pile driving will occur two hours either side of low tide (e.g., if low tide is at 1pm, no impact pile driving will occur from 11am to 3pm). This mitigation measure is set in place based on long term data indicating that beluga whale presence around the POA is highest around low tide (see section 3.2.4.1: *Tidal Influence on Distribution* in the 2008 EA) and is set in place to minimize potential exposure to noise. Number of takes, by year, as outlined in the application, is outlined in Table 5. However, take numbers were based on preliminary acoustic data from the 2008 survey which used peak worst-case sound level scenarios to determine harassment isopleths (NMFS thresholds are based on rms values) and failed to recognize data where pile driving could not be distinguished from background levels. NMFS has therefore determined that take numbers, as presented in the application and summarized below, are likely overestimates of actual take. Despite these calculated take numbers, the POA/MARAD requested in the application that NMFS allow the taking of 34 beluga whales per year. If this take level is reached, in-water pile driving and chipping would be suspended if a beluga whale is seen approaching the designated harassment zones.

Table 5. Summary of Calculated Number of Beluga Whales Takes (from the Port of Anchorage/MARAD LOA application). The "Low Tide Correction" refers to the requirement to cease impact pile driving 2 hours either side of low tide.

Table 6-5 Summary of Beluga Whales Potentially Exposed within Harassment Radii with Low Tide Correction

Year		Vibratory	Impact[1]	Total
2009	TOTAL[2]	67	21	88
	With Low Tide Correction		4	**71**
2010	TOTAL[2]	41	21	62
	With Low Tide Correction		4	**45**
2011	TOTAL[2]	41	14	55
	With Low Tide Correction		2	**43**
2012	TOTAL[2]	76	15	91
	With Low Tide Correction		2	**78**
2013	TOTAL[2]	55	20	75
	With Low Tide Correction		4	**59**
Before July 15, 2014	TOTAL[2]	4	4	8
	With Low Tide Correction		1	**5**
After July 15, 2014	TOTAL[2]	6	3	9
	With Low Tide Correction		1	**7**
	GRAND TOTALS	290	98	388
	With Low Tide Correction		**19**	**309**

The following assumptions accompany the take calculations in the LOA application: (1) the calculated nearshore density of whales is evenly distributed across Knik Arm; (2) sound transmission through the water is spherical; and (3) no other mitigation other than low tide shut down would be implemented. Including these assumptions in the calculations results in the high take numbers estimated in the application. However, (1) whales are not evenly distributed across Knik Arm and use the nearshore area the most heavily; (2) acoustic study data indicates that sound does not radiate equally from the source in all directions, but radiates perpendicularly from the source across Knik Arm and does not radiate up or down Knik Arm; and (3) additional mitigation requirements, such as shut down if large groups (more than 5 individuals) or groups with a calf are sighted near or approaching harassment zones, will further minimize take. Therefore, NMFS has estimated that smaller numbers of marine mammals will be taken as a result of the proposed activities than were estimated in POA/MARAD's application, and is proposing that only those smaller numbers be authorized.

The type of chipping hammer proposed for use to demolish the dock operates at 19% less horsepower than a vibratory hammer and therefore would not release as much energy into the environment. However, to be conservative, NMFS proposes to implement the same mitigation requirement for in-water chipping as vibratory pile driving unless the POA provides discrete

sound transmission levels from this activity that indicate at what specific smaller distances marine mammals would be exposed to the applicable acoustic harassment thresholds. Although estimates take numbers from chipping can not be determined at this time, in annual LOAs, NMFS would not authorize annual harassment levels above that considered small or which would cause more than a negligible impact to affected species or stocks.

As stated in section 1.2 of this Draft SEA, a description of the stabbing process, in particular the use of a "dropping" method or use hairpin weight, were described in the LOA application and is therefore analyzed here if these methods would result in takes of marine mammals. Although these activities produce some sound that is capable of being transmitted via the sheet piling to the marine environment, these activities involve a much lower energy than use of pile hammers, as shown in Table 3 which shows results of acoustic measurements made during hairpin weight use. Based on the description of these methods and the acoustic data, NMFS considered the potential for introduction of sound in the marine environment from these activities to be insignificant in terms of direct effects on marine resource, including consideration of these actions as a potential additional stressor in the marine environment. NMFS assessment concludes that the effects of sound from these actions in the water environment would be insignificant, and no harassment of marine mammals during stabbing is anticipated.

Little information is available for over-water sound levels from explosives near shore (out-of-water); however, two studies conducted by the California Department of Transportation (Caltrans) have measured in-water sound transmission resulting from out-of-water blasting. In 2003, Caltrans collected measurements of underwater sound pressure levels during out-of-water controlled blasting operations as part of the construction of bridge pier footings on Yerba Buena Island for the San Francisco – Oakland Bay Bridge, East Span Seismic Safety Project (Caltrans 2004). In-water sound pressure levels were measured during out-of-water blasts for two different piers approximately, from the centerline, 80 m (262 ft) and 30 m (98 ft) from the shoreline. Results varied at each pier for each blast; however, in general, sound pressure levels measured at 10- 20 m ranged from 170 to 183 dB re 1 microPa (rms) based on a 35 msec time constant for the pier 80m from the shoreline and 177 to 198 (rms) based on 35 msec time constant for the pier 30 m from shore. It should be noted that rms sound pressure levels reported using the 35-msec time constant was found to be 3-5 dB higher than "true" rms sound pressure level measured over the duration of the impulse, which is about 1 to 2 seconds in duration; therefore, the sound pressure levels provided above should be considered conservative. Data from blasting events at both piers indicated that underwater sound pressure levels appeared to increase as blasting was conducted at lower elevations; putting the blast closer to the water.

Dewatered cofferdams represent the most effective way of reducing construction/ demolition created noise into the water column because all operations are completely decoupled from the surrounding water column. The POA/MARAD would create a dike which acts like a cofferdam as in the Caltrans project. The out-of-water blasting at the POA would occur 91m (300 ft) from shore and the blasts would be confined (unlike Caltrans); therefore, sound levels in water would likely be similar or less than the results from the Caltrans pier located 80m from the shoreline but likely not greater. Based on the Caltrans results, no Level A harassment is likely to

occur and the POA/MARAD have agreed, as suggested by NMFS, not to conduct any blasting if any marine mammal is within visible range of the POA. MMOs would begin scanning for marine mammals thirty minutes prior to detonation with high power binoculars and the naked eye. Should any marine mammal be sighted, blasting will be delayed until the animal has moved out-of-sighting range or not seen within 15 mintues. Therefore, NMFS anticipates that marine mammals will not be harassed from out-of-water blasting and is not proposing to issue any taking from this activity.

4.3 ADAPTIVE MANAGEMENT STRATEGY

Adaptive management principles consider appropriate adjustments to mitigation, monitoring, and reporting as the outcomes of the proposed actions and required mitigation are better understood. NMFS includes adaptive management principles in the regulations for the implementation of the proposed action, and any adaptive adjustments of mitigation and monitoring would be led by NMFS via the MMPA process and developed in coordination with the POA and MARAD. Continued opportunity for public input would be included via the MMPA process, as appropriate (i.e. via the "Letter of Authorization" process). The intent of adaptive management here is to ensure the continued proper implementation of the required mitigation measures, to conduct appropriate monitoring and evaluation efforts, and to recommend possible adjustments to the mitigation/monitoring/reporting to accomplish the established goals of the mitigation and monitoring. Generally speaking, adaptive management supports the integration of NEPA's principles into the ongoing implementation and management of the Proposed Action, including a process for improving, where needed, the effectiveness of the identified mitigations. Note that any adjustment of mitigation and monitoring conducted in keeping with adaptive management principles would be within the scope of the environmental analyses and considerations presented in the 2008 EA and this SEA. Should other changes that are outside the scope of these analyses be considered, appropriate additional NEPA analysis would be conducted.

The adaptive management strategy described in the 2008 EA remains in effect and is incorporated here by reference. In accordance with 50 CFR 216.105(c), the Secretary may establish regulations for the proposed activity based on the best available information. As new information is developed, through monitoring, reporting, or research, the regulations may be modified, in whole or in part, after notice and opportunity for public review. NMFS plans to continue to conduct June/July aerial surveys to estimate Cook Inlet beluga whale population size. NMFS would consider annual population estimates in its issuance of each LOA. In addition, all monthly and yearly monitoring reports, as well as published scientific literature relating to the proposed action, will be reviewed thoroughly before issuance of the yearly LOAs. Should trends in beluga whale use of the waters around the POA change to a level considered significant or observable reactions of beluga whales to activities associated with the MTRP are beyond those anticipated by NMFS (see section 4.2.3.2. in both this document and the 2008 EA), NMFS will undertake a review of the POA's construction activities and either modify or suspend regulations, as appropriate, after opportunity for public comment. Possible modifications

include, but are not limited to, changes to mitigation requirements or monitoring methods set forth in the regulations.

4.4 SUMMARY OF COMPLIANCE WITH LAWS, NECESSARY FEDERAL PERMITS,LICENSES, AND ENTITLEMENTS

4.4.1 Marine Mammal Protection Act

On July 14, 2009, NMFS issued the POA/MARAD an IHA under 101(A)(5)(d) of the MMPA and implementing regulations in 216. 107 to take small numbers of marine mammals incidental to pile driving associated with the POA's expansion project.

4.4.2 Endangered Species Act

As stated, on October 20, 2008, a notice was published in the *Federal Register* announcing the listing of Cook Inlet belugas whales under the ESA, with an effective date of December 20, 2008. This action occurred post- IHA issuance and since the notice was published, no in-water pile driving activities have occurred. In April 2009, when in-water work in schedules to resume, the POA is required to obtain the appropriate ESA authorization (i.e., an incidental take statement) to harass marine mammals.

The POA/MARAD have requested consultation with NMFS on whether the MTRP would jeopardize the continued existence of endangered Cook Inlet beluga whales. The NMFS Permits, Conservation and Education Division also requested initiation of consultation with the NMFS AKR on the issuance of regulations under section 101(a)(5)(A) of the MMPA.

4.4.3 Other Permits

All permits obtained by the POA/MARAD, as described in the 2008 EA, remain valid and are therefore incorporated here by reference. In summary, the POA has obtained the following permits required to undertake POA expansion construction:

- USACE Section 404/10 Permit – August 2005
- NMFS Letter of Concurrence of No Incidental Take for 2006 (in-water fill) – May 2006
- Alaska Department of Natural Resources/Coastal Management Program Final Consistency Concurrence – July 7, 2006
- Alaska Department of Environmental Conservation/Division of Water Quality Section 401 Permit – July 21, 2006
- USACE Section 404/10 Permit – August 2007
- NMFS IHA for 2008 – July 15, 2008 through July 14, 2009

4.5 MITIGATION MEASURES

As required under the MMPA, NMFS considered mitigation to effect the least practicable adverse impact on marine mammals and has developed a series of mitigation measures, as well as monitoring and reporting procedures that would be required as part of its incidental harassment authorization.

All mitigation measures contained in the IHA issued in 2008 would remain in effect for the proposed regulations. All in-water chipping during dock demolition would be subjected to the same mitigation requirements as for vibratory pile driving. In addition, the POA would be required to suspend any blasting events during dock demolition if any marine mammal is sighted around the POA. MMOs will be placed on site thirty minutes prior to detonation and, if any marine mammal is sighted, detonation will be delayed. If fog, rain, or other environmental conditions (e.g., rough sea state) impede optimal sighting conditions, blasting will not occur until conditions improve. NMFS does not typically mitigate for out-of-water detonations, especially when it does not occur immediately adjacent to the water's edge. In this case, there will be at least 300 ft of dry land between the water and dock being demolished. However, due to the sensitivity of this stock, both respective to the population size and public interest, NMFS is requiring that no blasting occur if a beluga whale is sighted, and is applying this measure to all marine mammals. Because blasting, if indeed a chosen method of dock demolition, would occur only out-of-water, at least 300 ft from the waters edge, and monitoring would establish that no marine mammal was in the vicinity of the POA, NMFS has determined that this activity will not have an impact on marine mammals.

4.6 UNAVOIDABLE ADVERSE IMPACTS

There are some unavoidable adverse impacts to habitat from the MTRP, as described in the 2008 EA and are incorporated here by reference. In summary, the elimination of 135 acres of intertidal and subtidal wetlands and emitting noise into the water column is unavoidable. However, based on the information provided in the EA and this SEA (e.g., habitat mitigation and restoration measures, marine mammals expected and documented reactions to noise from pile driving), NMFS believes that these habitat effects will have a negligible impact (as defined in the MMPA) on the affected species and stocks of marine mammals.

CUMULATIVE EFFECTS

To meet the requirements of NEPA, analysis of potential cumulative effects of a proposed action and its alternatives must be described and considered when evaluating environmental impacts. The 2008 EA addresses multiple natural and anthropogenic past, present, and reasonably foreseeable future actions (RFFAs) which, when combined with the proposed action, could result in adverse impacts to the human environment. However, as described in the EA, these actions do not raise impacts to levels considered significant.

4.6.1 Past and Present Actions

Relevant past and present actions are those that have influenced the current condition of the resource. For the purposes of this SEA, past and present actions include both human controlled events (such as subsistence harvest, oil and gas exploration and development activities, pollution, and coastal development), and natural events (such as predation, stranding events, climate change, parasitism and disease).

Based on the recently released Conservation Plan, past and present natural and anthropogenic stressors on Cook Inlet beluga whales listed and described in section 4.7.1 of the 2008 EA are still considered appropriate. However, strandings and their associated concerns have been updated in that document and are therefore updated in this SEA as appropriate.

Strandings

The term stranding refers to belugas that are found in waters too shallow to permit them to swim, as well as to belugas that are found out of their natural habitats. Belugas whales generally strand either accidentally by entering shallow water to avoid killer whale predation or while chasing prey as the tide recedes (exacerbated by the extreme tidal fluctuations), or as a result of disease, illness, or injury. Often, during mass strandings (those involving two or more whales), zero or only a couple of whales stranded will actually die. Therefore, for the purposes of this discussion, "strandings" will refer to animals that are found alive, and "dead strandings" will refer to whales that are found dead.

As discussed in the Conservation Plan, beluga whale strandings in upper Cook Inlet are not uncommon, with a majority occurring in Turnagain Arm. Mass strandings are usually associated with extreme tidal fluctuations ("spring tides") or killer whale sighting reports (Shelden et al. 2003). NMFS considered the significance of stranding events in the 2000 status review and found that stranding related mortalities had not caused the Cook Inlet beluga whale to be in danger of extinction, and that the population was not likely to become so in the foreseeable future given the expectation that the population would increase two to six percent per year with the restrictions placed on subsistence hunting. However, given the findings that these whales were not recovering at expected rates, NMFS recognized that strandings are a constant threat to the recovery of this species. Incidents of mortalities associated with recent mass strandings, specifically ones in 2003 and 2005, changed NMFS' stance on the influence mass strandings has on recovery of the population. As stated in the Conservation Plan, "NMFS now believes that mass strandings now represent a significant threat to the conservation and recovery of these whales."

To date, no strandings of any cetacean species have been attributed to pile driving noise or other non in-water explosive construction related noise (B. Southall, pers. comm., February 9, 2009). For this and other reasons described earlier in this chapter, NMFS does not anticipate behavioral changes that could lead to strandings in response to port expansion activities would occur. Beluga whale behavior in the presence of the loudest port expansion activity to date (i.e., pile driving) appears, at least preliminarily, to remain unchanged from any natural behavior.

Whale density around the POA remains high (see Fig.2) and whales continue to exhibit the same trends in abundance and habitat use.

4.6.2 Reasonably Foreseeable Future Actions (RFFAs)

The information provided on the six major RFFAs addressed in the 2008 EA remain applicable and are incorporated here by reference. These include subsistence harvest (which between 2000 and 2008 have been 0,1,1,1,9,2,0,0, and 0 whales, respectively), the Knik Arm Bridge, Port MacKenzie dock expansion, the Cook Inlet Ferry Project, the Chuitna Coal facility, and the increased presence and size of vessels docking at the POA. One additional RFFA, the Alaska Communications Systems (ACS) Fiber Optic Cable Project, has since been presented to and analyzed by NMFS in terms of impacts to Cook Inlet beluga whales and EFH. NMFS concluded in that analysis that no issues of concern related to the Marine Mammals Protection Act and Essential Fish Habitat exist.

Since preparation of the EA, one research permit application and one permit amendment has been submitted to the NMFS' Permits, Education and Conservation Division (74 FR 6579, February 10, 2008). The purpose of the research for the permit, as described in the application, is to use photo-identification methods to identify individual whales and to provide information about movement patterns, habitat use, survivorship, reproduction, and population size of Cook Inlet beluga whales. Since 2005, this research, which involves only close approach to photograph animals (no invasive research), has been conducted under a General Authorization. However, since Cook Inlet beluga whales are now listed under the ESA, this research must be authorized under an MMPA/ESA scientific research permit. The applicant proposes to conduct up to 30 small vessel based surveys from May-October annually, resulting in the potential harassment, Level B only, of up to 54 beluga whales, annually, throughout Cook Inlet. The permit evaluation process is currently underway. If issued, the permit would expire 5 years from date of issuance.

The permit amendment is requested to continue the aerial surveys each June and July which provide NMFS with annual population estimates. NMFS began these comprehensive, aerial surveys in 1993. Takes would be restricted to Level B harassment as the only means of harassment would be by aircraft noise when searching for, documenting, and photographing beluga whales at low altitudes. These surveys are the only method of documenting any trends in beluga whale abundance in Cook Inlet and provide annual abundance estimates. These data are essential to making informed management decisions and to the recovery of Cook Inlet beluga whales. As stated in the Adaptive Management section of this SEA, NMFS will consider annual population estimates based on these surveys upon issuance of yearly LOAs to the POA/MARAD.

4.8 CONCLUSION

Based on the information contained within the 2008 EA and in this document, NMFS has determined that the proposed taking of marine mammals would have a negligible impact on the

affected species or stocks, and that marine mammal responses, when exposed to noise from pile driving and demolition chipping, would be limited to mild to moderate behavioral and minor physiological reactions, if any, all of which are considered Level B harassment. The data provided in the marine mammal monitoring reports collected to date provide further evidence that noise associated with the MTRP is not significantly impacting Cook Inlet beluga whales in the short term (e.g., behavioral responses) or long term as trends in beluga whale abundance and habitat use around the POA remain consistent as in pre-pile driving surveys. All habitat related impacts are thoroughly described in the 2008 EA and no alterations to the design plan have occurred since preparation of that document. In summary, there will be some adverse impacts to habitat; however, these are not expected to result in significant direct (e.g., noise pollution) or indirect (e.g., reduction of prey availability) impacts to marine mammals. In addition, because impacts, if any, to Cook Inlet beluga whales will be negligible, no adverse impacts on the availability of beluga whales for subsistence needs are anticipated.

One new activity that is analyzed in this SEA is the proposed demolition options. The POA/MARAD and NMFS engaged in several discussions before the demolition plan was submitted. Based on these exchanges, the POA/MARAD determined that in-water blasting would be eliminated it from the plan. The demolition plan contains conservative mitigation measures (i.e., treats low energy chipping the same as vibratory hammering and no out-of-water blasting may occur if any marine mammal is sighted within the area or if sightability reduced). Therefore, NMFS negligible impact determination, as further supported in previous Federal Register and NEPA documents, remains applicable.

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