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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XF957

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Cook Inlet Pipeline Cross Inlet Extension Project

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

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received a request from Harvest Alaska, LLC (Harvest), a subsidiary of Hilcorp, for authorization to take marine mammals incidental to installing two pipelines in Cook Inlet. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITP.Daly@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-oil-and-gas* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-oil-and-gas*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

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

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined "negligible impact" in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as an impact resulting from the specified activity:

1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas; (ii) directly displacing subsistence users; or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and

2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The MMPA states that the term "take" means to harass, hunt, capture, kill or attempt to harass, hunt, capture, or kill any marine mammal.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption

of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

National Environmental Policy Act

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

Accordingly, NMFS is preparing an Environmental Assessment (EA) to consider the environmental impacts associated with the issuance of the proposed IHA. NMFS' EA will be made available at *www.nmfs.noaa.gov/pr/permits/incidental/oilgas.htm*. We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On May 16, 2017, NMFS received a request from Harvest Alaska (Harvest) for an IHA to take six species of marine mammals incidental to installing two pipelines as part of the Cook Inlet Extension Project, Cook Inlet, Alaska. Harvest submitted a revised application on October 20, 2017 and again on January 29, 2018 which NMFS determined was adequate and complete on January 30, 2018. Harvest's request is for take of small numbers of Cook Inlet beluga whales (*Delphinapterus leucas*), humpback whales, (*Megaptera novaeangliae*), killer whales (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), harbor seals (*Phoca vitulina*) and Steller sea lions (*Eumetopias jubatus*) by Level B harassment only. The IHA would be valid from April 15, 2018 through March 31, 2019. Neither Harvest nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

The proposed Cook Inlet Pipeline Cross Inlet Extension Project (CIPL Project) includes the installation of two new steel subsea pipelines in the waters of Cook Inlet. Work includes moving subsea obstacles out of the pipeline corridor, pulling two pipelines (one oil, one gas) into place on the seafloor, securing pipelines with sandbags, and connecting the pipelines to the existing Tyonek platform. The positioning and installation of the offshore pipeline would be accomplished using a variety of pipe pulling, positioning, and securing methods supported by dive boats, tug boats, and/or barges and winches. Work would be limited to the pipeline corridor from Ladd Landing to the Tyonek Platform and could occur for up to 110 days. The installation of the subsea pipelines, specifically presence of and noise generated from work vessels has the potential to take marine mammals by harassment. Harvest requests authorization to take small numbers of six species of marine mammals incidental to the project.

Dates and Duration

The proposed project would take place for approximately 110 days from April 15 through October 31, 2018. Work would be staged with repositioning of obstacles (*e.g*., boulders) lasting approximately 15 days, pipe pulling lasting approximately 11 days (weather permitting) and the remainder of the project, including equipment mobilization, pipeline securing, pipeline connection to the Tyonek platform, and demobilization constituting the remainder of the 110 day project.

Specific Geographic Region

Cook Inlet is a complex Gulf of Alaska estuary (as described in BOEM 2016) that covers roughly 7,700 square miles (mi^2; 20,000 square kilometers (km^2)), with approximately 840 miles

(mi) (1,350 linear kilometer (km)) of coastline (Rugh *et al.*,, 2000). Cook Inlet is generally divided into upper and lower regions by the East and West Forelands (see Figure 1-1). Northern Cook Inlet bifurcates into Knik Arm to the north and Turnagain Arm to the east. Overall, Cook Inlet is shallow, with an area-weighted mean depth of 148 feet (ft)(44.7 meters (m)). The physical oceanography of Cook Inlet is characterized by complex circulation with variability at tidal, seasonal, annual, and inter-annual timescales (Musgrave and Statscewich 2006). This region has the fourth largest tidal range in the world and as a result, extensive tidal mudflats that are exposed at low tides occur throughout Cook Inlet, especially in the upper reaches. These tides are also the driving force of surface circulation. Strong tidal currents drive the circulation in the greater Cook Inlet area with average velocities ranging from 1.5 to 3 m per second (3 to 6 knots).

The project area is located a few kilometers north of the village of Tyonek between Ladd Landing and the Tyonek Platform (see Figure 1-2 of Harvest's application). On April 11, 2011, NMFS designated two areas as critical habitat comprising 7,800 km^2 (3,016 mi^2) of marine habitat. The project area is within critical habitat area 2, which includes known fall and winter Cook Inlet beluga foraging and transiting areas (see Figure 4-1 in Harvest's application).

Detailed Description of Specific Activity

The project includes the installation of two new steel subsea pipelines in the waters of Cook Inlet: a 10- inch (in) nominal diameter gas pipeline (Tyonek W 10) between the Tyonek Platform and the Beluga Pipeline (BPL) Junction, and the 8-in nominal diameter oil pipeline (Tyonek W 8) between the existing Tyonek Platform and Ladd Landing (see Figure 1-1 in Harvest's application). The length of the Tyonek W 10 pipeline would be approximately 11.1 km (6.9 mi) with 2.3 km (1.4 mi) onshore and 8.9 km (5.5 mi) offshore in Cook Inlet waters. The

Tyonek W 8 pipeline would be approximately 8.9 km (5.5 mi) in Cook Inlet waters. The purpose and need of the CIPL Project is to allow for the transportation of natural gas directly from the Tyonek Platform to the Beluga Pipeline (BPL) on the west side of Cook Inlet for use in the Southcentral natural gas system and to support future oil development at Tyonek Platform. At this time, Harvest would not connect the Tyonek 8 oil pipeline to the Tyonek platform or make the oil pipeline operational.

The proposed method of construction is to fabricate the pipelines in approximately 0.8 km (0.5 mi) segments onshore in the cleared pull area. Each pipeline section would be inspected and hydrotested, and coatings would be verified. Additional segments would be welded together, section splice welds inspected, and coatings applied to welds in the onshore fabrication area. The entire 0.8 km (0.5 mi) section would be pulled offshore following connection of each new segment, until the pipeline section is approximately half of the entire offshore length of the pipeline. This section would then be pulled into place where the 10-in line can be connected to Tyonek Platform. The 8-in line would be capped subsea adjacent to the platform for future connection to the platform. Thereafter, a second section would be constructed using the same technique as the first. It would be pulled into place where it can be connected to the first section using a subsea mechanical connection.

Pipeline segments/sections would be pulled from shore using a winch mounted on an anchored pull barge. The barge would be repositioned and anchored during slack tide, by two 120 ft tugs with a horsepower of 5,358 at 900 revolutions per minute (RPM). The barge will be secured by four anchors and repositioned during the slack tides. The pipe pull itself will take place through the tide periods to minimize cross currents and maximize control of pipeline routing. An additional winch onshore would maintain alignment of the pipeline during pulling

and the winch on the pull barge would pull the pipeline from shore out to the platform. A dive boat would be used to pull the tag line to the main winch line. Both pipelines would be installed concurrently. Once a segment for one pipeline has been pulled, the corresponding segment for the other pipeline would be pulled, until the long sections for both pipelines have been constructed. A sonar survey (operating at or above 200 kilohertz (kHz)) would be used to confirm that the pipe is being installed in the correct position and location.

In the tidal transition zone, the pipeline would be exposed on the ground surface. The exposed pipelines would be buried through the tidal transition zone and each would be connected to its respective onshore pipeline and shutdown valve station. The proposed method for pipeline burial in the transition zone is by trenching adjacent to the pipeline using the open cut method, placing the pipeline in the trench, followed by direct burial of the pipeline to a depth of approximately 1.8 m (6 ft). Each pipeline would be buried in a separate trench. The trench from the cut in the bluff would be continued into the tidal zone area and would be dug from the beach side as far offshore as possible. The barge *Ninilchik* would then be anchored as close to the beach as possible and the trench continued for the required distance from shore to adequately protect the pipe from ice damage. This would be done from the barge with the crane equipped with a clam shell bucket or backhoe. Trenching in the tidal transition zone would take place during low tide to allow shore-based excavators maximum distance into the tidal zone. Work in the intertidal zone in waters less than 30-ft (9-m) deep work would occur for approximately 2-4 hours per slack tide over a 4- to 6-week period.

Further offshore, the barge, dive boat and divers would be used to install sand bags over the pipelines for anchoring and stabilization. Stabilization is expected to take about 10-11 days. Upon completion of pipeline stabilization activities, the dive boat would be used to install

cathodic protection (anode sleds) along the pipelines. Sonar surveys would be completed after installation to confirm that pipeline placement is correct. Sonar equipment would operate at frequencies above 200 kHz, outside the hearing sensitivity range of any marine mammals in the area, so would have no potential for take of marine mammals and is not addressed further in this document.

Once each 2.5-mi section of each pipeline have been pulled into place, divers would measure the specific distances between the sections. Steel spool sections with gaskets that would connect the two sections of each pipeline would be fabricated onshore; divers would use the spool sections to connect the pipeline segments underwater. The dive boat would be operating intermittently during the nine-day period needed to complete the underwater connections. The barge would be stationary, with tugs powered on and standing-by.

The subsea gas pipeline (Tyonek W10) would be connected to a new riser at the Tyonek Platform by new subsea connections. In addition to modifications to existing piping, a shutdown valve would be installed. An existing pipeline lateral (from platform to subsea flange) would be capped and abandoned in place; it would be available for future use. The connections would be fabricated onshore, transported to the platform on a workboat, and lowered to the seafloor. A dive boat, tug, and barge would facilitate the connection from new pipeline to the base of the new gas riser. The dive boat would be operating intermittently during the 9-day period needed to complete the underwater connections. A set of underwater tools may be used for a brief period to expose the location where the new subsea gas pipeline would be connected to the existing pipeline and prepare the pipeline for connection. These tools may include a hydraulic wrench, pneumatic grinder, and a hydraulic breaker and pressure washer (*i.e.*, Garner Denver Series

Pressure Washer) for removing concrete from existing infrastructure. The use of these tools would only be required during one dive for a short duration (less than 30 minutes).

Prior to initiating pipeline pulling activities, obstacles along the pull path would be repositioned. A subsea sonar survey was conducted in Spring 2017 to identify any obstacles that could damage the pipe during installation or impede the pipe pulling activities. A number of items 1.5 me (5 ft) in diameter or greater were identified during the survey and would be relocated to a position that does not interfere with the pipeline route. A maximum of 50 obstacles (*e.g.*, boulders) would be moved away from the pipeline corridor using a barge-mounted crane or tug-mounted tow cable. During slack tide, divers would attach a 500-600 ft long pull cable to the obstacle. The cable would then be pulled by a tug or, for larger objects, rolled up on a winch on the barge. Because divers can only attach cables during slack tide, Harvest anticipates this work to take approximately 15 days.

In total, approximately 100-110 barge moves will be required intermittently over the 110-day period. There are four anchors for the barge and two anchors that will provide hold-back force for pulling pipe. Approximately four anchors will be set at each slack tide which occurs threetimes/day. Slack tide lasts approx. 1.5-2 hours. During slack tide, tugs will be moving anchors and repositioning the barge if possible depending on conditions and timing. Each anchor is 30,000 pounds with 15 ft of chain and 4,200 ft of wire cable. Tugs engines will be on 24-hours per day; however, they would be "standing by" during pipe pulling when engine vessel noise is minimal. Tugs cannot turn off engines when not working due to strong currents. Actual time estimated for tugs to be working is a maximum of 12 hours per day. Dive boats will be secured to the barge for the majority of time, which will not require engines to be on or engaged.

During the project, a work boat would be onsite to support the barges (*e.g.*, supply equipment) and a crew boat would shuttle crew back and forth between the barge/vessels and the beach.

Harvest provided source levels for the various vessels that would be used for the project. They also estimated pipe pulling source levels may be similar to a bucket dredge if the pipe hits something on the seafloor resulting in a peak source level of 179 decibels (dB). We believe this to be a gross overestimate because Cook Inlet is comprised of silty, muddy substrates and Harvest would move obstacles prior to initiating pipe pulling. However, no pipe pulling acoustic data is available; therefore, we include the proposed source level here. We note that while any one of these individual sources operating alone would not necessarily be expected to result harassment of marine mammals, the overall cumulative elevation in noise from a combination of sources as well as the presence of equipment in what is typically a natural, undeveloped environment (see further discussion below) may result in take of marine mammals. Table 1 contains construction scenarios during the phased project and associated use duration.

Table 1. Construction Scenarios, Associated Equipment and Estimated Source Levels during the 108-day CIPL project.

Project Component/Scenario	Noise Source	Approximate Duration (days)	Approximate hours per day
Obstruction Removal and Pipeline pulling (subtidal)	Tug (120 ft) x 2 Dive boat[1] Sonar boat[2] Work boat (120 ft)[1] Crew boat (48 ft)[1] Barge anchoring[3]	68 28 9 68 68	10-12 9 12 9 9
Pipeline pulling (intertidal)	Tug x 2 Barge anchoring Crew boat	16 16	10-12
Trenching (transition zone)	Tug x 2 Backhoe/bucket dredge[4] (beach-based)	10 10	12 12
Mid-line Pipeline Tie-In Work	Tug x 2 Dive boat Work boat Barge anchoring	7 4 7 7	10-12 9 12 6
Connections of Tyonek Platform	Tug x 2 Work boat	7 7	10-12 8

	Dive boat Underwater tools (hydraulic wrench, pneumatic grinder, and pressure washer)	7 7	9 30 minutes
Total Duration[5]	Tug x 2 Dive boat Sonar boat Work/crew boat	108 39 9 108	

[1]The dive boat, crew boat, and work boat durations are shorter than tugs because they would be tied to the barge most of the time. Main engines would not be running while tied up, but a generator and compressors would be running to support diving operations.
[2] Sonar boat engine noise only. Sonar equipment would operate at frequencies over 200 kHz.
[3] Barge is equipped with four anchors.
[4] Backhoe and tug will be used approximately 2-4 hours per low/slack tide to complete transition zone installation.
[5]Total time does not include allowance of 6 weather days because vessels would not operating during those days.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SAR; *www.nmfs.noaa.gov/pr/sars/*) and more general information about these species (*e.g*., physical and behavioral descriptions) may be found on NMFS's website (*www.nmfs.noaa.gov/pr/species/mammals/*).

Table 2 lists all species with expected potential for occurrence in Cook Inlet and summarizes information related to the population or stock, including regulatory status under the MMPA and the Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2016). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Alaska SARs (Muto *et al.*, 2016). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2016 SARs (Muto *et al.*, 2016) available online at: *www.nmfs.noaa.gov/pr/sars/draft.htm*.

Table 2. Need a title here.

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR[3]	Annual M/SI[4]
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray whale	*Eschrichtius robustus*	Eastern North Pacific	-;N	20,990 (0.05, 20125, 2011)	624	132
Family Balaenopteridae (rorquals)						
Fin whale	*Balaenoptera physalus*	Northeast Pacific Stock	E;Y	1,368 (1,368, 0.34, 2010)	UND	0.6
Minke whale	*Balaenoptera acutorostrata*	Gulf of Alaska	-;N	unk	N/A	0
Humpback whale	*Megaptera novaeangliae*	Central North Pacific	E;Y	10,103 (0.3, 7890, 2006)	83	24
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	E;Y	1,107 (0.3, 865, 2006)	3	2.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Beluga whale	*Delphinapterus leucas*	Cook Inlet	E;Y	312 (0.1, 287, 2014)	UND	0
Killer whale	*Orcinus orca*	Alaska Resident	-;N	2,347 (unk, 2,347, 2012)	24	1
Killer whale	*Orcinus orca*	Gulf of Alaska, Aleurian, Bering Sea Transient	-;N	587 (unk, 587, 2012)	5.9	1
Family Phocoenidae (porpoises)						

Harbor porpoise	*Phocoena phocoena*	Gulf of Alaska	-;Y	31,046 (0.214, N/A, 1998)	UND	72
Dall's porpoise	*Phocoenoides dalli*	Alaska	-;N	83,400 (0.097, N/A, 1993)	UND	38
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	*Eumetopias jubatus*	Western U.S.	E;Y	50,983 (unk, 50,983, 2015)	306	236
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	Cook Inlet/Shelikof Strait	-;N	27,386 (unk, 25,651, 2011)	770	234

1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.
2- NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.
3 – UND is an undetermined Potential Biological Removal (PBR)
4 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

All species that could potentially occur in the proposed survey areas are included in Table 2. However, the rarity of animals in the action and temporal and/or spatial occurrence of gray whales, fin whales, minke whales, and Dall's porpoise is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. Dall's porpoise occur in Cook Inlet but primarily in the lower portions south of the Forelands. Dall's porpoise are considered rare in the action area. Fin whale sightings in Cook Inlet are rare. During the NMFS aerial beluga surveys from 2001 to 2014 a total of nine groups were reported; all of which occurred south Kachemak Bay which is located in Lower Cook Inlet approximately 100 miles southeast of the project area. Minke whales are also known to occur primarily in Lower Cook Inlet and are rare. From 1994 to 2012, only three minke whales were observed during the NMFS aerial surveys. In Lower Cook Inlet there have been several documented sightings of gray

whales over the years; however, sighting in the Upper Inlet are rare. For reasons of rarity and distribution, we do not discuss these species further.

Beluga whale

Beluga whales inhabiting Cook Inlet are one of five distinct stocks based on the following types of data: distribution, population response, phenotype, and genotype (Muto *et al.*, 2016). During ice-free months, Cook Inlet beluga whales are typically concentrated near river mouths (Rugh *et al.*, 2010). The fall-winter-spring distribution of this stock is not fully determined; however, there is evidence that most whales in this population inhabit upper Cook Inlet year-round (Hansen and Hubbard 1999, Rugh *et al.*, 2004, Shelden *et al.*, 2015, Castellote *et al.*, 2016).

The Cook Inlet beluga whale stock was designated as depleted under the MMPA (65 FR 34590, 21 May 2000), and on 22 October 2008, NMFS listed Cook Inlet beluga whales as endangered under the ESA (73 FR 62919, 22 October 2008). Bi-annually, NMFS conducts aerial surveys to determine stock abundance. The most recent survey occurred in June 2016 with the next survey scheduled for June 2018. Aerial surveys during June documenting the early summer distribution and abundance of beluga whales in Cook Inlet were conducted by NMFS each year from 1993 to 2012 (Rugh *et al.*, 2000, 2005; Shelden *et al.*, 2013), after which NMFS began biennial surveys in 2014 (Shelden *et al.*, 2015b) (Fig. 2). The abundance estimate for beluga whales in Cook Inlet is based on counts by aerial observers and video analysis of whale groups Based on population data, there is a declining trend in abundance. From 1999 to 2014, the rate of decline was 1.3 percent (SE = 0.7%) per year, with a 97 percent probability that the growth rate is declining (*i.e.*, less than zero), while the 10-year trend (2004-2014) is -0.4 percent per year (with a 76 percent probability of declining) (Shelden *et al.*, 2015b). Threats that have

the potential to impact this stock and its habitat include the following: changes in prey availability due to natural environmental variability, ocean acidification, and commercial fisheries; climatic changes affecting habitat; predation by killer whales; contaminants; noise; ship strikes; waste management; urban runoff; construction projects; and physical habitat modifications that may occur as Cook Inlet becomes increasingly urbanized (Moore *et al.,* 2000, Lowry *et al.,* 2006, Hobbs *et al.,* 2015, NMFS, 2106a). Planned projects that may alter the physical habitat of Cook Inlet include; highway improvements; mine construction and operation; oil and gas exploration and development; and expansion and improvements to ports.

NMFS has tagged animals to identify daily patterns of movement. During summers from 1999 to 2002, satellite tags were attached to 18 beluga whales to determine their distribution through the fall and winter months (Hobbs *et al.,* 2005, Goetz *et al.,* 2012). Tags on four of these whales transmitted for only a few days and transmissions stopped in September for another whale (Shelden *et al.,* 2015a). Ten tags transmitted whale locations from September through November and, of those, three transmitted into January, three into March, and one into late May (Hobbs *et al.,* 2005, Goetz *et al.,* 2012). All tagged beluga whales remained in Cook Inlet, primarily in Upper Inlet waters. Kernel-density probability distribution maps were generated from tag data and indicate habitat use of the area of the specified activity is low from spring through the fall as whales are concentrated higher in the inlet by the Susitna Delta, Beluaga River, and Knik and Turnigan Arm. These findings are also corroborated by the aerial survey data which documents very few sightings in the action area in June. NMFS also records sightings reported opportunistically. Six sightings near Tyonek are on record from April through October 2000 through 2014 with group size ranging from 3 to 14 animals (K. Shelden, pers. comm., January 25, 2018).

Subsistence harvest of beluga whales in Cook Inlet is historically important to one local village (Tyonek) and the Alaska Native subsistence hunter community in Anchorage. Following the significant decline in Cook Inlet beluga whale abundance estimates between 1994 and 1998, the Federal government took actions to conserve, protect, and prevent further declines in the abundance of these whales. In 1999 and 2000, Public Laws 106-31 and 106-553 established a moratorium on Cook Inlet beluga whale harvests except for subsistence hunts conducted under cooperative agreements between NMFS and affected Alaska Native organizations. A long-term harvest plan set allowable harvest levels for a 5-year period, based on the average abundance in the previous 5-year period and the growth rate during the previous 10-year period. A harvest is not allowed if the previous 5-year average abundance is less than 350 beluga whales. Due to population estimates below 350, no hunt has occurred since 2005 when two whales were taken under an interim harvest plan.

NMFS designated critical habitat for Cook Inlet beluga whales in 2011 (Figure A-1; NMFS 2011). In its critical habitat designation, NMFS identified two distinct areas (Areas 1 and 2) that are used by Cook Inlet beluga whales for different purposes at different times of year. Area 1 habitat is located in the northernmost region of Cook Inlet and consists of shallow tidal flats, river mouths, and estuarine areas, important for foraging and calving. Beluga whales concentrate in Area 1 during the spring and summer months for these purposes (Goetz *et al.*, 2012). Area 1 has the highest concentrations of beluga whales from spring through fall (approximately March through October), as well as the greatest potential for adverse impact from anthropogenic threats (FR 2009). Area 2 habitat was designated for the area's importance to fall and winter feeding, as well as transit. Area 2 includes the Cook Inlet waters south of Area 1 habitat, as well as Kachemak Bay and foraging areas along

the western shore of Lower Cook Inlet (Hobbs *et al.,* 2005). Based on dive behavior and analysis of stomach contents from Cook Inlet belugas, it is assumed that Area 2 habitat is an active feeding area during fall and winter months when the spatial distribution and diversity of winter prey likely influence the wider beluga winter range (NMFS 2008b).

Spring and Summer Distribution- Cook Inlet beluga whales show "obvious and repeated use of certain habitats," specifically through high concentrations in the Upper Cook Inlet (critical habitat Area 1) during spring and summer months (NMFS 2008a). From approximately April through September, Cook Inlet belugas are highly concentrated in Upper Cook Inlet, feeding mainly on gadids (Gadidae *spp.)* and anadromous fish, including eulachon and Pacific salmon. The eulachon and all five Pacific salmon species: Chinook, pink, coho, sockeye, and chum spawn in rivers throughout Cook Inlet. Eulachon is the earliest anadromous species toappear, arriving in Upper Cook Inlet in April with major spawning runs in the Susitna and Twentymile rivers in May and July (NMFS 2008). The arrival of the eulachon appears to draw Cook Inlet beluga whales to the northern regions of Cook Inlet where they concentrate to feed on the early spring run, sometimes feeding on the eulachon exclusively before salmon arrive in the Upper Inlet (Abookire and Piatt 2005; Litzow *et al.,* 2006).

Annual aerial surveys conducted in June from 1998 through 2008 covering all of Cook Inlet observed the beluga whales to be almost entirely absent from mid and lower portions of the inlet and the majority located between the Little Susitna River and Fire Island in the Upper Inlet (Rugh *et al.,* 2010). The greatest concentrations of individuals were observed in the mouth of the Susitna River and extending into the Knik Arm and toward Turnagain Arm. Only between two and 10 individuals were observed during the survey in the Lower Inlet, in

Kachemak Bay. Those low sample size provides for statistical uncertainty; however, direct observations during aerial surveys provide strong evidence Cook Inlet belugas restrict their movements during spring and summer months to the extreme north of the inlet (*e.g.*, Rugh *et al.*, 2010).

The Alaska Department of Fish and Game (ADF&G) collected seasonal distribution data on Cook Inlet belugas using passive acoustic recorders deployed year-round at 13 locations in Cook Inlet from 2008 to 2013 (Castellote *et al.*, 2016). Each device was equipped with two types of recorders, an ecological acoustic recorder that monitored for low-frequency (0 to 12.5 kHz) social signals and a cetacean and porpoise detector for high-frequency (20 to 160 kHz) echolocation signals. During this study, a single recorder was deployed at Trading Bay. This device collected 9,734 acoustic effort hours (AEH) during the summer months (May to October) and 11,609 AEH during the winter months (November to April) over a 3-year period. Beluga detections were characterized by any echolocation, call, or whistle detected for any hour as a detection positive hour (DPH).

A recent acoustic study found a relatively constant pattern of variation in beluga whale presence between summer and winter months. During the summer, the percent of belugas detected positively per hour (% DPH) was highest in Upper Cook Inlet, primarily in Eagle Bay (12.4 percent), Little Susitna River (7.6 percent), and Beluga River (4.8 percent) and lowest in the Lower Inlet (less than 1 percent), which includes Trading Bay. During the winter, the highest percent DPH was at the Beluga River (6.0 percent), while Trading Bay had the second highest percent DPH during these same months (Castellote *et al.*, 2016). These findings agreed with the past aerial and telemetry data.

Fall and Winter Distribution- Beginning in October, beluga whales become less concentrated, increasing their range and dispersing into deeper waters of the upper and mid-region of Cook Inlet. In late summer and fall (August to October), Cook Inlet belugas use the streams on the west side of Cook Inlet from the Susitna River south to Chinitna Bay, sometimes moving up to 35 miles upstream to follow fish migrations (NMFS 2008a). Direct winter observation of beluga whales is less frequent than in summer; however, Hobbs *et al*. (2005) estimated the Cook Inlet beluga whale distribution during fall and winter months based on known locations of satellite-tagged beluga whales from 1999 through 2003 (National Marine Mammal Laboratory (NMML) 1999, 2000, 2001, 2002-2003). Estimated Cook Inlet beluga whale distributions from August through March indicate that individuals concentrate their range in the upper region of Cook Inlet through September but have a much increased range from October to March, utilizing more areas of the inlet. The predicted winter range has a more southerly focal point than in summer, with the majority of time spent in the mid-region of the inlet beginning in December.

Although there are indications that belugas may travel to the extreme south of Cook Inlet, the available data show belugas remaining in the upper to mid-Inlet through the winter months. Most likely, the dispersal in late fall and winter results from belugas' need to forage for prey in bottom or mid-waters rather than at river mouths after the seasonal salmon runs have ceased. As salmon runs begin to decline for the year, Cook Inlet belugas change to a diet of fish found in nearshore bays, estuaries, and deeper waters, including cod (*Gadus morhua*), Pacific staghorn sculpin (*Leptocottus armatus*), flatfish such as starry flounder (*Platichthys stellatus*), and yellowfin sole (*Limanda aspera*) (Hobbs *et al.*, 2008).

If beluga whale are in the CIPL project area, they are not expected to linger during the proposed work period (April through October) but are expected to being moving north between the Beluga River (Susitna River delta) and the McArthur River (Trading Bay) or cross the inlet from the Beluga River to Point Possession/Chickaloon Bay, presumably looking for opportunities to feed on returning anadromous fish and outmigrating smolt (pers. comm., email from K. Shelden, October 13, 2017). The distance between the project site and dense concentrations of foraging marine mammals at the mouths of major spawning rivers in upper Cook Inlet is approximately 20 to 30 kms (12 to 18 mi) and over 50 km (31 mi) between the pipeline corridor and foraging areas in Knik and Turnagain Arms.

Harbor seal

Harbor seals have been observed throughout Cook Inlet. During the winter, they are primarily aquatic, but through the summer months they spend more time hauled out onshore to rest, molt, and avoid predation. During the summer months, when not hauled out, harbor seals can be found foraging at the mouths of large rivers, primarily on the west side of the inlet (Boveng *et al.*, 2012). A multi-year study of seasonal movements and abundance of harbor seals in Cook Inlet was conducted between 2004 and 2007. This study involved multiple aerial surveys throughout the year, and the data indicated a stable population of harbor seals during the August molting period (Boveng *et al.*, 2012).

Steller sea lion

In 1990, the Steller sea lion was added to the list of ESA species (55 FR 49204). During the early 1990s, advances in genetic technology helped to identify two distinct population segments (DPS) of Steller sea lions within the North Pacific range. The eastern DPS of Steller sea lions ranges from California north to Cape Suckling, Alaska; the western DPS ranges from

Cape Suckling west to Japan, including Cook Inlet. The population estimate of western DPS sea lions decreased by 40 percent in the 1990s. (Loughlin and York 2000). In 1997, the western DPS was reclassified as endangered under the ESA. Critical habitat was designated for Steller sea lions; however, it does not occur within Cook Inlet.

Steller sea lions do not show regular patterns of migration. Most adult Steller sea lions occupy rookeries during pupping and breeding season (late May to early July). No rookeries are known to exist in the upper or mid-areas of Cook Inlet, but several have been identified approximately 130 mi to the south, at the extreme southern tip of the Kenai Peninsula (NMFS 2008b). Steller sea lions have an extensive range during the winter months and often travel far out to sea and use deep waters in excess of 1,000 m (NMFS 2008b).

The western DPS of Steller Sea Lion occurs in Cook Inlet but ranges south of Anchor Point around the offshore islands and along the west coast of the Upper Inlet in several bays such as Chinitna and Iniskin (Rugh *et al.,* 2005a). Designated rookeries and haulout sites include those near the mouth of the Cook Inlet, which is well south of the Forelands and the Action Area. Critical habitat has not been designated in mid- to upper Cook Inlet and Steller sea lions are considered rare in upper Cook Inlet.

Harbor porpoise

Harbor porpoises are ubiquitous throughout most of Alaska. Their range includes all nearshore areas from Southeast Alaska up to Point Barrow, including the Aleutian Islands (Gaskin 1984; Christman and Aerts 2015). The Alaska harbor porpoise population is separated into three stocks for management purposes. These include the Southeast Alaska stock, GOA stock, and the Bering Sea stock. Harbor porpoises in Cook Inlet are considered part of the GOA stock, most recently estimated at 25,987 (Hobbs and Waite 2010).

Harbor porpoises forage on much of the same prey as belugas; their relative high densities in the Lower Inlet may be due to greater availability of preferred prey and less competition with belugas (Shelden *et al.,* 2014). Although densities appear to be higher in the Lower Inlet, sightings in the Upper Inlet are not uncommon (Nemeth *et al.,* 2007).

Harbor porpoise sightings occur in all months of open water in the Upper Inlet but appear to peak in April to June and September to October. Small numbers of harbor porpoises have been consistently reported in the Upper Inlet between April and October, except recently higher numbers than typical have been observed. The highest monthly counts include 17 harbor porpoises reported for spring through fall 2006 by Prevel Ramos *et al.,* (2008), 14 for spring of 2007 by Brueggeman *et al.,* (2007a), 12 for fall of 2007 by Brueggeman *et al.,* (2008), and 129 for spring through fall in 2007 by Prevel Ramos *et al.,* (2008) between Granite Point and the Susitna River during 2006 and 2007; the reason for the recent spike in numbers (129) of harbor porpoises in the upper Cook Inlet is unclear and quite disparate with results of past surveys, suggesting it may be an anomaly. The spike occurred in July, which was followed by sightings of 79 harbor porpoise in August, 78 in September, and 59 in October in 2007. The number of porpoises counted more than once was unknown. Harbor porpoise may occur in large groups; however, this is more typical in the Lower Inlet and more commonly they occur in groups of one to three animals (Sheldon *et al*., 2014)

Killer whales

Killer whale distribution in Alaska ranges from the southern Chukchi Sea, west along the Aleutian Islands, and south to Southeast Alaska. As a species, killer whales have been divided into two separate genetically distinct groups; these are resident and transient ecotypes (Hoelzel and Dover 1991; Hoelzel *et al.,* 1998, 2002; Barrett-Lennard 2000). The resident

ecotypes feed exclusively on fish, while the transient whales consume only marine mammals (Saulitis *et al.,* 2000).

Killer whales representing both ecotypes are known to occur in Cook Inlet. The subgroups include the Alaska Resident, GOA, Aleutian Islands, and Bering Sea Transient stocks. Recent population estimates of these ecotypes are 2,347 resident and 587 transient (Muto *et al.,* 2016). During the NMFS aerial beluga surveys from 2001 to 2014, a total of 15 groups (62 individuals) were observed; all sightings took place in the lower part of the inlet, south of Anchor River (Figure A-7). Shelden *et al*. (2003) compiled anecdotal reports of killer whales and systematic surveys in Cook Inlet to determine effects of predations on beluga whales. Based on their findings, out of the 122 reported sightings, only 18 were in the Upper Inlet (Shelden *et al.,* 2003).

Humpback whale

On October 11, 2016, NMFS revised the listing status of the humpback whale into 14 DPSs and the species-level endangered listing was removed (81 FR 62259). Now, 2DPSs are listed as endangered, 2DPSs are threatened, and the remaining 10 DPSs are no longer listed under the ESA. Three DPSs of humpback whales occur in waters off the coast of Alaska: the Western North Pacific DPS, listed as endangered under the ESA; the Mexico DPS, a threatened species; and the Hawaii DPS, which is no longer listed as endangered or threatened under the ESA. Humpback whales in the Gulf of Alaska are most likely to be from the Hawaii DPS (89 percent probability) (Wade *et al.,* 2016). Humpback whales that occur in Cook Inlet, albeit infrequently, are considered part of the Hawaii DPS.

The GOA is one of the summer feeding grounds humpback whales migrate to each year (Baker *et al.,* 1986). The GOA feeding area includes Prince William Sound to the Shumagin

Islands, including Kodiak Island (Muto *et al.*, 2016). Three humpback whale DPSs make up the GOA feeding group; these are the Hawaii DPS (not listed), the Mexico DPS (Threatened), and the Western North Pacific DPS (Endangered) (Wade *et al.*, 2016).

Capture and recapture methods using more than 18,000 fluke identification photographs suggest a large percentage of the GOA feeding group is comprised of the Hawaii DPS. Data from the same study indicate that the Mexico DPS also contributes to the GOA feeding group; the study was also the first to show that some whales from the Western North Pacific stock migrate to the Aleutian Islands and could potentially be part of the GOA group (Barlow *et al.*, 2011).

In the summer, humpback whales are present regularly and feed outside of Cook Inlet, including Shelikof Strait, Kodiak Island bays, the Barren Islands, and the Kenai and Alaska peninsulas. However, there have been several projects in Cook Inlet that have observed humpback whales in Lower Cook Inlet during the summer. From 2001 to 2014, the NMFS aerial beluga survey of Cook Inlet recorded a total of 198 humpback sightings; the majority of which occurred south of Homer. In 2014 five humpback whale groups were observed on the east side of Cook Inlet during the surveys conducted as part of the Apache project (Lomac-MacNair *et al.*, 2014). Three of these sightings, including the mother-calf pair, were observed north of the Forelands but still well south of the Project Area.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal

hearing capabilities (*e.g*., Richardson *et al*., 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al*. (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e*., low-frequency cetaceans). Subsequently, NMFS (2016) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al*. (2007) retained. The hearing groups and the associated frequencies are indicated below (note that these frequency ranges correspond to the range for the composite group, with the entire range not necessarily reflecting the capabilities of every species within that group):

Low-frequency cetaceans (mysticetes): generalized hearing is estimated to occur between approximately 7 hertz (Hz) and 35 kHz;

Mid-frequency cetaceans (larger toothed whales, beaked whales, and most delphinids): generalized hearing is estimated to occur between approximately 150 Hz and 160 kHz;

High-frequency cetaceans (porpoises, river dolphins, and members of the genera Kogia and Cephalorhynchus; including two members of the genus Lagenorhynchus, on the basis of recent echolocation data and genetic data): generalized hearing is estimated to occur between approximately 275 Hz and 160 kHz;

- Pinnipeds in water; Phocidae (true seals): generalized hearing is estimated to occur between approximately 50 Hz to 86 kHz;
- Pinnipeds in water; Otariidae (eared seals): generalized hearing is estimated to occur between 60 Hz and 39 kHz.

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

For more detail concerning these groups and associated frequency ranges, please see NMFS (2016) for a review of available information. Six marine mammal species (four cetacean and two pinniped (one otariid and one phocid) species) have the reasonable potential to be taken by the proposed project. Of the cetacean species that may be present, one is classified as low-frequency cetaceans (*i.e*., all mysticete species), two are classified as mid-frequency cetaceans (*i.e*., all delphinid and ziphiid species and the sperm whale), and one is classified as high-frequency cetaceans (*i.e*., harbor porpoise and Kogia spp.).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The "Estimated Take by Incidental Harassment" section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The "Negligible Impact Analysis and Determination" section considers the content of this section, the "Estimated Take by Incidental Harassment" section, and the "Proposed Mitigation" section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of

individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

The proposed project includes the use of various types of vessels (*e.g.*, tugs, dive boat, sonar boat), a large barge secured by four anchors, continuous types of work (*e.g.*, trenching, moving obstacles barge anchoring, use of a underwater tools) that, collectively, would emit consistent, low levels of noise into Cook Inlet for an extended period of time (110 days) in a concentrated area. Unlike projects that involve discrete noise sources with known potential to harass marine mammals (*e.g.*, pile driving, seismic surveys), both the noise sources and impacts from the pipeline installation project are less well documented and, for reasons described below, may range from Level B harassment to exposure to noise that does not result in harassment. The various scenarios that may occur during this project extend from vessels in stand-by mode (tug engines on and maintaining position) to multiple vessels and operations occurring at once. Here, we make conservative assessments of the potential to harass marine mammals incidental to the project and, in the Estimated Take section, accordingly propose to authorize take, by Level B harassment.

The proposed project has the potential to harass marine mammals from exposure to noise and the physical presence of working vessels (*e.g.*, tugs pushing barges) other construction activities such as removing obstacles from the pipeline path, pulling pipelines, anchoring the barge, divers working underwater with noise-generating equipment, trenching, etc. In this case, NMFS considers potential harassment from the collective use of industrial vessels working in a concentrated area for an extended period of time and noise created when moving obstacles, pulling pipelines, trenching in the intertidal transition zone, and moving barges two to three times per day using two tugs. Essentially, the project area will become be a concentrated work

area in an otherwise non-industrial, serene setting. In addition, the presence of the staging area on land and associated work close to shore may harass hauled-out harbor seals.

Auditory Effects

NMFS defines a noise-induced threshold shift (TS) as "a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level" (NMFS, 2016). The amount of threshold shift is customarily expressed in dB (ANSI 1995, Yost 2007). A TS can be permanent (PTS) or temporary (TTS). As described in NMFS (2016), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.*, impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.*, spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.*, how animal uses sound within the frequency band of the signal; *e.g.*, Kastelein *et al.*, 2014), and the overlap between the animal and the source (*e.g.*, spatial, temporal, and spectral). When analyzing the auditory effects of noise exposure, it is often helpful to broadly categorize sound as either impulsive — noise with high peak sound pressure, short duration, fast rise-time, and broad frequency content — or non-impulsive. When considering auditory effects, vibratory pile driving is considered a non-impulsive source while impact pile driving is treated as an impulsive source.

Permanent Threshold Shift - NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2016). Available data from humans and

other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see NMFS 2016 for review).

Temporary Threshold Shift – NMFS defines TTS as a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2016). Based on data from cetacean TTS measurements (see Finneran 2014 for a review), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.*, 2000; Finneran *et al.*, 2000; Finneran *et al.*, 2002).

Depending on the degree (elevation of threshold in dB), duration (*i.e.*, recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.*, 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Masking

Since many marine mammals rely on sound to find prey, moderate social interactions, and facilitate mating (Tyack, 2008), noise from anthropogenic sound sources can interfere with

these functions, but only if the noise spectrum overlaps with the hearing sensitivity of the marine mammal (Southall *et al.*, 2007; Clark *et al.,* 2009; Hatch *et al.,* 2012). Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al.,* 2009). Acoustic masking is when other noises such as from human sources interfere with animal detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs in the frequency band that he animals utilize. Since noises generated from tugs pushing the barge, anchor handling, trenching, and pipe pulling are mostly concentrated at low frequency ranges, these activities likely have less effect on high frequency echolocation sounds by odontocetes (toothed whales). However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (*e.g.*, Clark *et al.,* 2009) and cause increased stress levels (*e.g.*, Holt *et al.,* 2009).

Unlike TS, masking, which can occur over large temporal and spatial scales, can potentially affect the species at population, community, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than 3 times in terms of sound pressure level) in the world's ocean from pre-industrial periods, and most of these

increases are from distant shipping. All anthropogenic noise sources, such as those from vessel traffic and cable-laying while operating anchor handling, contribute to the elevated ambient noise levels, thus increasing potential for or severity of masking.

Behavioral Disturbance

Finally, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson *et al.,* 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where noise sources are located; and/or flight responses (*e.g*., pinnipeds flushing into water from haulouts or rookeries).

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is difficult to predict (Southall *et al.,* 2007). Currently NMFS uses a received level of 160 dB re 1 micro Pascal (μPa) root mean square (rms) to predict the onset of behavioral harassment from impulse noises (such as impact pile driving), and 120 dB re 1 μPa (rms) for continuous noises (such as operating dynamic positioning (DP) thrusters). No impulse noise within the hearing range of marine mammals is expected from the Quintillion subsea cable-laying operation. For the pipeline installation activities, only the 120 dB re 1 μPa (rms) threshold is considered because only continuous noise sources would be generated.

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be biologically significant if the change affects growth, survival,

and/or reproduction, which depends on the severity, duration, and context of the effects. Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, moving direction and/or speed, reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding), visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping), avoidance of areas where sound sources are located, and/or flight responses. Pinnipeds may increase their haul-out time, possibly to avoid in-water disturbance (Thorson and Reyff 2006). These potential behavioral responses to sound are highly variable and context-specific and reactions, if any, depend on species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day, and many other factors (Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007). For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al*., 1995; NRC 2003; Wartzok *et al*., 2003).

In consideration of the range of potential effects (PTS to behavioral disturbance), we consider the potential exposure scenarios and context in which species would be exposed. Cook Inlet beluga whales are expected to present in low numbers during the work; therefore, they are likely to, at some point, be exposed to elevated noise fields in the vicinity of the project. However, beluga whales are expected to be transiting through the area (as described in the *Description of Marine Mammals* section); thereby limiting exposure duration as the majority of the beluga whale population is expected to concentrate farther north. Belugas are expected to be headed to, or later in the season, away from, the concentrated foraging areas near the Beluga River, Susitna Delta, and Knik and Turnigan Arms. Similarly, humpback whales, killer whales, harbor porpoise and Steller sea lions are not expected to remain in the area. Because of this and

the relatively low level sources, the likelihood of PTS and TTS is discountable. Harbor seals; however, may linger or haul-out in the area but they are not known to do so in any large number or for extended periods of time (there are no known major haul-outs or rookeries in the project area). Here we find there is small potential for TTS but again, PTS is not likely due to the types of sources involved in the project.

Given most marine mammals are likely transiting through the area, exposure is expected to be brief but, in combination with the actual presence of working equipment, may result in animals shifting pathways around the work site (*e.g.*, avoidance), increasing speed or dive times, or cessation of vocalizations. A short-term, localized disturbance response is supported by data indicating belugas regularly pass by industrialized areas such as the Port of Anchorage; therefore, we do not expect any abandonment of the transiting route. We also anticipate some animals may elicit such mild reactions to the project that take does not occur. For example, during work down times (*e.g.*, while tugs may be operating engines in "stand-by" mode), the animals may be able to hear the work but any resulting reactions, if any, are not expected to rise to the level of take.

Estimated Take

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

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

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

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns and possibly low levels of TTS for individual marine mammals resulting from exposure to multiple working vessels and construction activities in a concentrated area. Based on the nature of the activity, Level A harassment is neither anticipated nor proposed to be authorized.

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

Described in the most basic way, we estimate take by considering: 1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; 2) the area or volume of water that will be ensonified above these levels in a day; 3) the density or occurrence of marine mammals within these ensonified areas; and, 4) and the number of days of activities. Below, we describe these components in more detail and present the proposed take estimate.

Acoustic Thresholds

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

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to

varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2011). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 μPa (rms) for continuous (*e.g.* vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources.

Harvest's proposed activity includes the use of multiple continuous sources and activities (*e.g.*, vessels, pipe pulling) and therefore the 120 dB re 1 μPa (rms) threshold is applicable. . As described above, we believe it is not any one of these single sources alone that is likely to harass marine mammals, but a combination of sources and the physical presence of the equipment. We use this cumulative assessment approach below to identify ensonsified areas and take estimates.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS, 2016b) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). Harvest's proposed activity includes the use of non-impulsive (*e.g.*, tugs pushing a barge, pipe pulling) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: *http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm*.

Table 3. Thresholds identifying the onset of Permanent Threshold Shift.

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

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

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

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds.

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

The sources and activities involved with the proposed project are relatively low compared to other activities for which NMFS typically authorizes take (e.g., seismic surveys, impact pile driving). However, these sources will be operating for extended periods and NMFS PTS thresholds now incorporate a time component. That time component is based on both the duration of the activity and the likely amount of time an animal would be exposed. To determine if there is potential for PTS from the proposed project, we considered operations may occur throughout the day and night and despite tugs being on stand-by for much of the time, a full day (24 hours) is the most conservative approach for estimating potential for PTS. Therefore, we

used a source level of 170 dB measured at 1 m (estimated tug noise), a practical spreading loss model (15logR), and the weighting factor adjustment (WFA) for vibratory pile driving as a proxy for vessels (2.5 kHz). The distances to PTS thresholds considering a 24 hour exposure duration is provided in Table 4. Based on these results, we do not anticipate the nature of the work has the potential to cause PTS in any marine mammal hearing group; therefore, we do not anticipate auditory injury (Level A harassment) will occur.

Table 4. Distances to NMFS PTS Thresholds.

Hearing Group	Distance to PTS Threshold (m)
Low-frequency cetaceans	22.6
Mid-frequency cetaceans	2.0
High-frequency cetaceans	33.4
Phocids	13.8
Otarids	1.0

Each construction phase (see Table 1 above) involves multiple pieces of equipment that provide physical and acoustic sources of disturbance. For this project, we anticipate the ensonified area to shift as the project progresses along the pipeline corridor. That is, at the onset of the project, work will be concentrated in the intertidal zone close to shore and, as work continues, moving offshore towards the Tyonek platform. We also anticipate that the sound field generated by the combination of several sources will expand and contract as various construction related activities are occurring. For example, pushing the barge may require tugs to use increased thruster power, which would likely result in greater distances to the 120 dB re 1 μPa threshold in comparison to general movement around the area. Therefore, calculating an ensonified area for the entire pipeline corridor would be a gross overestimate and we offer an alternative here.

Because we consider the potential for take from the combination of multiple sources (and not any given single source), we estimate the ensonified area to be a rectangle centered along the pipeline corridor which encompasses all in-water equipment and a buffer around the outside of the cluster of activities constituting the distance calculated to the 120 dB threshold from one tug (*i.e.*, 2,200 m). NMFS determined a tug source level (170 dB re: 1 μPa) for the duration of the project would be a reasonable step in identifying an ensonified zone since tugs would be consistently operating in some manner, and other sources of noise (e.g., trenching, obstacle removal, underwater tools) are all expected to produce less noise. Anchor handling during barge relocation is also a source of noise during the project; however, we believe using the tug is most appropriate. NMFS is aware of anchor handling noise measurements made in the Arctic during a Shell Oil exploratory drilling program that produced a noise level of 143 dB re 1 μPa at 860 m (LGL *et al*., 2014). However, that measurement was during deployment of 1 of 12 anchors in an anchor array system associated with a large drill rig and it would be overly conservative to adopt here.

Although vessels and equipment (*e.g*., tugs, support vessels, barge) spacing would vary during the course of operations, a single layout must be assumed for modeling purposes. We assume the barge used for pipe pulling and supporting trenching and stabilization is placed in the middle of a group of vessels and directly in line with the pipeline corridor. The sonar and dive boats would also be concentrated along the pipeline corridor path. We conservatively assume tugs would be spaced approximately 0.5 km from the barge/pipeline corridor during stand-by mode and could be on opposite sides of the corridor. Also, vessels and equipment would shift from nearshore to offshore as the project progresses. For simplicity, we divided the pipeline corridor (8.9 km) in half for our ensonified area model because each pipe pulled would be

approximately 4.45 km each. We then considered the estimated distance to the 120 dB threshold from the tug (2.2 km). We then doubled that distance and adjusted for a 0.5 km distance from the pipeline corridor to account for noise propagating on either side of a tug. We used those distances to calculate the area of the rectangle centered around the pipeline corridor (Area = length x width or A = 4.45 km x ((2.2 km + 0.5km) x 2) for a Level B ensonified area of 24.03 km^2. As the work continues, this area would gradually shift from nearshore to farther offshore, terminating at the Tyonek platform.

Marine Mammal Occurrence

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

There are six marine mammal species that have the potential to occur within the action area from April through October. The NMFS National Marine Mammal Laboratory (NMML) maintains a database of Cook Inlet marine mammal observations collected by NOAA and U.S. Coast Guard personnel, fisheries observers, fisheries personnel, ferry operators, tourists, or other private boat operators. NMFS also collects anecdotal accounts of marine mammal sightings and strandings in Alaska from fishing vessels, charter boat operators, aircraft pilots, NMFS enforcement officers, Federal and state scientists, environmental monitoring programs, and the general public. These data were used to inform take estimates.

Empirical estimates of beluga density in Cook Inlet are difficult to produce. One of the most robust is the Goetz *et al*. (2012) model based on beluga sighting data from NMFS aerial surveys from 1994 to 2008. The model incorporated several habitat quality covariates (*e.g.*, water depth, substrate, proximity to salmon streams, proximity to anthropogenic activity, etc.) and related the probability of a beluga sighting (presence/absence) and the group size to these

covariates. The probability of beluga whale presence within the project area from April through September is 0.001 belugas per km^2. Moving into October and the winter, density is likely to increase; however, Harvest anticipates all work will be completed no later than September.

Harvest provided density estimates for all other species with likely occurrence in the action area in their IHA application; however, data used to generate those densities do not incorporate survey efforts beyond 2011. Therefore, we have developed new density estimates based on data collected during NMFS aerial surveys conducted from 2001 to 2016 (Rugh *et al*. 2005; Shelden *et al*. 2013, 2015, 2017). The numbers of animals observed over the 14 survey years were summed for each species. The percent area of survey effort for each year (range 25 to 40 percent) was used to calculate the area surveyed which was summed for all years (Rugh *et al*. 2005; Shelden *et al*. 2013, 2015, 2017). Density estimates were then derived by dividing the total number of each species sighted during the survey by the total area of survey coverage (Table 5).

Table 5. Density Estimates for Marine Mammals Potentially Present within the Action Area based on Cook Inlet-wide NMFS aerial surveys 2001-2016.

Species	No. of Animals	Area (km^2)	Estimated Density (No. Animals/km^2)
CI beluga whale	-	-	0.0001[1]
Humpback whale	204	87,123	0.0023
Killer whale	70	87,123	0.0008
Harbor porpoise	377	87,123	0.004
Harbor seal	23,912	87,123	0.2745
Steller sea lion	74.1[2]	87,123	0.00085

[1] CI beluga whale density based on Goetz et al. (2012).
[2] Actual counts of Steller sea lions was 741; however, it is well documented this species almost exclusively inhabits the lower inlet south of the Fordlands with rare sightings in the northern inlet. Therefore, we adjusted the number of animals observed during the NMFS surveys (which cover the entire inlet) by 1/10 to account for this skewed concentration.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

To calculate take, we first estimate an amount as a product of ensonified area, species density, and duration of the project (Take = density x ensonified area x project days). As an example, for beluga whales, the estimated take is calculated as 24.03 km^2 x 0.001 x 108 days for a total of 2.59 belugas. However, for this and other species, we also consider anecdotal sightings with the project area, anticipated residency time, and group size. Table 6 provides our quantitative analysis of take considering density and group size.

Table 6. Quantitative Assessment of Proposed Take, by Level B harassment.

Species	Density	Calculated Take[1]	Average group size	Proposed Take (Level B)
CI beluga whale	0.001	2.59	8	29[2]
Humpback whale	0.0023	5.07	1-2	5
Killer whale	0.0008	1.77	5	5[3]
Harbor porpoise	0.004	8.83	1-3[4]	8
Harbor seal	0.2745	605.67	1-10[5]	606
Steller sea lion	0.00085	1.88	1-2	5

[1] Take = density x ensonifed area (24.03 km^2) x # of project days (108).
[2] Adjusted take is based on potential for one group of eight belugas per month or two groups of four animals per month.
[3] Adjusted take is based on one group of five animals or two to three groups of one to two animals during the project.
[4] Group size average from Sheldon *et al*. 2014.
[5] Represents range of group sizes observed during a seismic survey in the middle Inlet from May 6 through September 30, 2012 (Lomac-MacNair *et al*., 2012)

Cook Inlet beluga whales are expected to be transiting through the action area in group sizes ranging from 3 to 14 animals with an average of 8 animals/group. These groups sizes are based on NMFS aerial surveys and anecdotal reports near Tyonek from April through October (pers comm. K Sheldon, January 25, 2018). Therefore, Harvest requests take for up to 29 beluga whales in anticipation that one group of 8 animals may pass through the action area once permonth for the duration of the project (*i.e*., 8 animals/group x 1 group/month x 3.6 months).

For other cetaceans, we also consider group size and find killer whales have the potential to travel through the project area in groups exceeding the take calculated based on density. Because sighting data indicates killer whales are not common in the Upper Inlet, we anticipate one group to pass through the project area. The harbor porpoise take calculation is great enough to encompass their small group size; therefore, the density calculation appears to be an adequate representation of the number of animals that may occur in the project area from April through September.

Harbor seals and Steller sea lions are expected to occur as solitary animals or in small groups and may linger in the action area more so than transiting cetaceans. Harbor seal takes estimates based on density reflect a likely occurrence and we are not proposing to adjust the calculation. However, Steller sea lion density calculations produce an estimated take of one animal during the entire project. While Steller sea lions are rare in the action area, this species may not be solitary and may also remain in the action area for multiple days. In 2009, a Steller sea lion was observed three times during Port of Anchorage construction (ICRC 2009). During seismic survey marine mammal monitoring, Steller sea lions were observed in groups of one to two animals during two of three years of monitoring (Lomac-MacNair 2013, 2015). Therefore, we are proposing to increase the amount of take to 5 Steller sea lions to account for up to two animals to be observed over the course of three days (*i.e.*, two animals exposed three times).

Effects of Specified Activities on Subsistence Uses of Marine Mammals

The availability of the affected marine mammal stocks or species for subsistence uses may be impacted by this activity. The subsistence uses that may be affected and the potential impacts of the activity on those uses are described below. Measures included in this IHA to reduce the impacts of the activity on subsistence uses are described in the Proposed Mitigation

section. The information from this section and the Proposed Mitigation section is analyzed to determine whether the necessary findings may be made in the Unmitigable Adverse Impact Analysis and Determination section.

The villages of Tyonek, Ninilchik, Anchor Point, and Kenai use the upper Cook Inlet area for subsistence activities. These villages regularly harvest harbor seals (Wolfe *et al.,* 2009). Based on subsistence harvest data, Kenai hunters harvested an about 13 harbor seals on average per year, between 1992 and 2008, while Tyonek hunters only harvested about 1 seal per year (Wolfe *et al.,* 2009). Traditionally Tyonek hunters harvest seals at the Susitna River mouth (located approximately 20 miles from the project area) incidental to salmon netting, or during boat-based moose hunting trips (Fall *et al.,* 1984). Alaska Natives are permitted to harvest Steller sea lions; however, this species is rare in mid- and upper Cook Inlet, as is reflected in the subsistence harvest data. For example, between 1992 and 2008, Kenai hunters reported only two sea lions harvested and none were reported by Tyonek hunters (Wolfe *et al.,* 2008). Sea lions are more common in lower Cook Inlet and are regularly harvested by villages well south of the project area, such as Seldovia, Port Graham, and Nanwalek.

Cook Inlet beluga subsistence harvest has been placed under a series of moratoriums beginning 1999. Only five beluga whales have been harvested since 1999. Future subsistence harvests are not planned until after the 5-year population average has grown to at least 350 whales. Based on the most recent population estimates, no beluga harvest will be authorized in 2018.

Harvest's proposed pipeline construction activities would not impact the availability of marine mammals for subsistence harvest in Cook Inlet due to the proximity of harvest locations to the project (for harbor seals) and the general lack of Steller sea lion harvest. Beluga

subsistence harvest is currently under moratorium. Further, animals that are harassed from the project are expected to elicit behavioral changes that are short-term, mild, and localized.

Proposed Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

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

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

2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

NMFS anticipates the project will create an acoustic footprint above baseline of approximately 24 km^2 around the concentration of vessels and operational activities. There is a discountable potential for marine mammals to incur PTS from the project as source levels are relatively low, non-impulsive, and animals would have to remain at very close distances for multiple hours, to accumulate acoustic energy at levels which could damage hearing.. Therefore, we do not believe there is potential for Level A harassment and there is no designated shut-down/exclusion zone established for this project. However, Harvest will implement a number of mitigation measures designed to reduce the potential for and severity of Level B harassment and minimize the acoustic footprint of the project.

Harvest will establish a 2,200 m safety zone from the tugs on-site and employ a NMFS-approved protected species observer (PSO) to conduct marine mammal monitoring for the duration of the project. Prior to commencing activities for the day or if there is a 30-minute lapse in operational activities, the PSO will monitor the safety zone for marine mammals for 30 minutes. If no marine mammals are observed, operations may commence. If a marine mammal(s) is observed within the safety zone during the clearing, the PSO will continue to watch until either: (1) the animal(s) is outside of and on a path away from the safety zone; or (2) 15 minutes have elapsed if the species was a pinniped or cetacean other than a humpback whale, or 30 minutes for humpback whales. Once the PSO has determined one of those conditions are met, operations may commence.

Should a marine mammal be observed during pipe-pulling, the PSO will monitor and carefully record any reactions observed until the pipe is secure. No new operational activities would be started until the animal leaves the area. PSOs will also collect behavioral information on marine mammals beyond the safety zone.

Other measures to minimize the acoustic footprint of the project include: the dive boat, sonar boat, work boat, and crew boat will be tied to the barge or anchored with engines off when practicable; all vessel engines will be placed in idle when not working if they cannot be tied up to the barge or anchored with engines off; and all sonar equipment will operate at or above 200 kHz.

Finally, Harvest would abide by NMFS marine mammal viewing guidelines while operating vessels or land-based personnel (for hauled-out pinnipeds); including not actively approaching marine mammals within 100 yards and slowing vessels to the minimum speed necessary. NMFS Alaska Marine Mammal Viewing Guidelines may be found at *https://alaskafisheries.noaa.gov/pr/mm-viewing-guide*.

The proposed mitigation measures are designed to minimize Level B harassment by avoiding starting work while marine mammals are in the project area, lowering noise levels released into the environment through vessel operation protocol (e.g., tying vessels to barges, operating sonar equipment outside of marine mammal hearing ranges) and following NMFS marine mammal viewing guidelines. There are no known marine mammal feeding areas, rookeries, or mating grounds in the project area that would otherwise potentially warrant increased mitigation measures for marine mammals or their habitat. The proposed project area is within beluga whale critical habitat; however, use of the habitat is higher in fall and winter when the project would not occur nor would habitat be permanently impacted other than for the

presence of the pipelines on the seafloor. Thus mitigation to address beluga whale critical habitat is not warranted. Finally, the proposed mitigation measures are practicable for the applicant to implement. Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

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

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected

species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Harvest will abide by all monitoring and reporting measures contained within their Marine Mammal Monitoring and Mitigation Plan, dated January 28, 2018. A summary of those measures and additional requirements proposed by NMFS is provided below.

A NMFS-approved PSO will be on-watch daily during daylight hours for the duration of the project. Minimum requirements for a PSO include:

(a) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

(c) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(g) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

PSOs will be stationed aboard a vessel or the barge, work in shifts lasting no more than four hours without a minimum of a one hour break, and will not be on-watch for more than 12 hours within a 24-hour period.

To augment the vessel/barge based PSO monitoring efforts and to test operational capabilities for use during future projects, Harvest will conduct marine mammal monitoring around the project area using an unmanned aerial system (UAS) pending Federal Aviation Administration approval. The UAS pilot may be vessel or land-based and will maintain consistent contact with the PSO prior to and during monitoring efforts. UAS pilots and video feed monitors will be separate and distinct from PSO duties.

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and removal activities. It will include an overall description

of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.*, percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If NMFS submits comments, Harvest will submit a final report addressing NMFS comments within 30 days after receipt of comments.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or

mortality, Harvest would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report would include the following information:

- Description of the incident;
- Environmental conditions (*e.g.*, Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Harvest to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Harvest would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that Harvest discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), ADOT&PF would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with Harvest to determine whether modifications in the activities are appropriate.

In the event that Harvest discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Harvest would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. Harvest would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

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

incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 9, given that NMFS expects the anticipated effects of the proposed survey to be similar in nature. Potential impacts to marine mammal habitat were discussed previously in this document (see *Potential Effects of the Specified Activity on Marine Mammals and their Habitat*). Marine mammal habitat may be impacted by elevated sound levels, but these impacts would be temporary. In addition to being temporary and short in overall duration, the acoustic footprint of the proposed survey is small relative to the overall distribution of the animals in the area and their use of the area. Feeding behavior is not likely to be significantly impacted, as no areas of biological significance for marine mammal feeding are known to exist in the survey area.

The proposed project would create an acoustic footprint around the project area for an extended period time (3.6 months) from April through September. Noise levels within the footprint would reach or exceed 120 dB rms. We anticipate the 120 dB footprint to be limited to 20km^2 around the cluster of vessels and equipment used to install the pipelines. The habitat within the footprint is not heavily used by marine mammals during the project time frame (*e.g.*, Critical Habitat Area 2 is designated for beluga fall and winter use) and marine mammals are not known to engage in critical behaviors associated with this portion of Cook Inlet (*e.g.*, no known breeding grounds, foraging habitat, etc.). Most animals will likely be transiting through the area; therefore, exposure would be brief. Animals may swim around the project area but we do not expect them to abandon any intended path. We also expect the number of animals exposed to be small relative to population sizes. Finally, Harvest will minimize potential exposure of marine

mammals to elevated noise levels by not commencing operational activities if marine mammals are observed within the ensonified area.

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

- No mortality is anticipated or authorized;
- The project does not involve noise sources capable of inducing PTS;
- Exposure would likely be brief given transiting behavior of marine mammals in the action area;
- Marine mammal densities are low in the project area; therefore the number of marine mammals potentially taken is small to the population size; and
- Harvest would monitor for marine mammals daily and minimize exposure to operational activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of

abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Table 7 provides the quantitative analysis informing our small numbers determination. For most species, the amount of take proposed represents less than 1 percent of the population. The percent of stock of harbor seals is slightly higher at 2.1 percent; however, we anticipate the amount of take would include some individuals taken multiple times. For beluga whales, the amount of take proposed represents 9.1 percent of the population.

Table 7. Percent of Stock Proposed to Be Taken by Level B harassment.

Species	Stock	Abundance (Nbest)	Proposed Take (Level B)	% of Population
Beluga whale	Cook Inlet	312	29[2]	9.2
Humpback whale	Central North Pacific	10,103	5	0.0004
Killer whale	Alaska Resident	2,347	5[3]	0.2
	Gulf of Alaska, Aleurian, Bering Sea Transient	587		0.8
Harbor porpoise	Gulf of Alaska	31,046	8	0.0002
Harbor seal	Cook Inlet/Shelikof Strait	27,386	606	2.2
Steller sea lion	Western U.S.	50,983	5	0.0001

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an "unmitigable adverse impact" on the subsistence uses of the affected marine mammal species or

stocks by Alaskan Natives. NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The village of Tyonek engages in subsistence harvests; however, these efforts are concentrated in areas such as the Susitna Delta where marine mammals are known to occur in greater abundance. Harbor seals are the only species taken by Alaska Natives that may also be harassed by the proposed project. However, any harassment to harbor seals is anticipated to be short-term, mild, and not result in any abandonment or behaviors that would make the animals unavailable to Alaska Natives.

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

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance

for the issuance of IHAs, NMFS consults internally, in this case with Alaska Regional Office, whenever we propose to authorize take for endangered or threatened species.

NMFS is proposing to authorize take of Cook Inlet beluga whales and Steller sea lions, which are listed under the ESA. The Permit and Conservation Division has requested initiation of Section 7 consultation with the Alaska Region for the issuance of this IHA. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Harvest for take of marine mammals incidental to the CIPL project, Cook Inlet, from April 15, 2018 through April 14, 2019, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

Harvest Alaska (Harvest) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to the Cook Inlet Pipeline Cross Inlet Extension Project (CIPL Project) in Cook Inlet, Alaska, when adhering to the following terms and conditions.

This Incidental Harassment Authorization (IHA) is valid for a period of one year from the date of issuance.

This IHA is valid only for the installation of two pipelines from Ladd Landing to the Tyonek platform associated with the CIPL Project in Cook Inlet.

General Conditions

A copy of this IHA must be in the possession of the Harvest, its designees, and work crew personnel operating under the authority of this IHA.

The species authorized for taking are Cook Inlet beluga whales (*Delphinapterus leucas*), humpback whales, (*Megaptera novaeangliae*), killer whales (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), harbor seals (*Phoca vitulina*) and Steller sea lions (*Eumetopias jubatus*).

The taking, by Level B harassment only, is limited to the species listed in condition 3(b). See Table 6 for numbers of take authorized, by species.

The taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.

Harvest shall conduct briefings between construction supervisors and crews, marine mammal monitoring team, and acoustical monitoring team, prior to the start of all in-water construction activities, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

- Operational activities shall only be conducted no sooner than 30 minutes after sunrise and shall end no later than 30 minutes prior to sunset;
- Operational activities subject to these mitigation measures include obstacle removal, trenching, pipe pulling, and moving the barge (including pulling and deploying anchors);

- Prior to commencing operational activities, two NMFS-approved Protected Species Observers (PSOs) shall clear the area by observing the safety zone (extending approximately 2,200 m from any of the vessels) for 30 minutes; if no marine mammals are observed within those 30 minutes, activities may commence.

If a marine mammal(s) is observed within the safety zone during the clearing, the PSO shall continue to watch until the animal(s) is outside of and on a path away from the safety zone or 15 minutes have elapsed if the species was a pinniped or cetacean other than a humpback whale; for humpback whales the watch shall extend to 30 minutes. Once the PSO has cleared the area, operations may commence.

Should a marine mammal be observed during pipe-pulling, the PSO shall monitor and carefully record any reactions observed until the pipe is secure. No new operational activities would be started until the animal leaves the area. PSOs shall also collect behavioral information on marine mammals beyond the safety zone.

All vessel engines shall be placed in idle when not working.

All sonar equipment shall operate at or above 200 kHz.

Monitoring

The holder of this Authorization is required to conduct marine mammal and acoustic monitoring. Monitoring and reporting shall be conducted in accordance with Harvest's Marine Mammal Monitoring and Mitigation Plan, dated January 26, 2018.

A NMFS-approved PSO shall monitor for marine mammals during vessel use during daylight hours. The PSO shall be stationed on project vessels or the barge.

A PSO shall work in shifts lasting no longer than four hours with at least a one-hour break between shifts, and shall not perform duties as a PSO for more than 12 hours in a 24-hour period.

Qualified PSOs shall be trained biologists, with the following minimum qualifications:

Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

Advanced education in biological science or related field (undergraduate degree or higher required);

Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

Experience or training in the field identification of marine mammals, including the identification of behaviors;

Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

PSOs shall scan the safety zone 30 minutes prior to commencing work at the beginning of each day, and prior to re-starting work after any stoppage of 30 minutes or greater.
PSO shall scan The waters would continue to be scanned for at least 30 minutes after activities have been completed each day, and after each stoppage of 30 minutes or greater.
PSOs would scan the waters using binoculars, spotting scopes, and unaided visual observation;

PSO shall use NMFS-approved construction and sighting forms developed for this project as described in Appendix A of Harvest's IHA application.
Daily construction forms will filled out by at least one PSO. Information for this sheet shall, at minimum, include the following: general start and end time each construction day; start and end time for each operational activity as defined above; a description of other in-water activities (*e.g.*, tugs idle, divers in water, etc.) and associated time frames, and any other human activity in the project area

Marine Mammal Sighting forms shall include the following information: Construction activities occurring during each observation period; weather parameters (*e.g.*, percent cover, visibility); water conditions (*e.g.*, sea state, tide state); species, numbers and if possible, sex and age class of marine mammals; description of any marine mammal behavior patterns, including bearing and direction of travel and distance from activity; distance from activities to marine mammals and distance from the marine mammals to the observation point; description of implementation of mitigation measures (*e.g.*, shutdown or delay); locations of all marine mammal observations.

Reporting

The holder of this Authorization is required to: Submit a draft report on all marine mammal monitoring conducted under the IHA within ninety calendar days of the completion of

all pile driving and removal. If NMFS has comments on the draft report, ADOT&PF shall submit a final report to NMFS within thirty days following resolution of NMFS comments on the draft report. This report must contain the informational elements described below:

Detailed information about any implementation of shutdowns, including the distance of animals to pile driving and removal and description of specific actions that ensued and resulting behavior of the animal, if any.

Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.

Reporting injured or dead marine mammals:

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as serious injury, or mortality, ADOT&PF shall immediately cease the specified activities and report the incident to the Office of Protected Resources (301-427-8401), NMFS, and the Alaska Region Stranding Coordinator (907-271-1332), NMFS. The report must include the following information:

- Time and date of the incident;
- Description of the incident;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations and active sound source use in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Harvest to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Harvest may not resume their activities until notified by NMFS.

In the event that Harvest discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition), Harvest shall immediately report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS.

The report must include the same information identified in 6(b)(i) of this IHA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Harvest to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that Harvest discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g*., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Harvest shall report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS, within 24 hours of the discovery. Harvest shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS.

This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this Notice of Proposed IHA for the proposed [action]. We also request comment on the potential for renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform our final decision on the request for MMPA authorization.

On a case-by-case basis, NMFS may issue a second one-year IHA without additional notice when 1) another year of identical or nearly identical activities as described in the Specified Activities section is planned or 2) the activities would not be completed by the time the IHA expires and a second IHA would allow for completion of the activities beyond that described in the Dates and Duration section, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to expiration of the current IHA.
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted beyond the initial dates either are identical to the previously analyzed activities or include changes so minor (e.g., reduction in pile size) that the changes do not affect the previous analyses, take estimates, or mitigation and monitoring requirements.

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

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

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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